Paper
TRADE JOURNAL

Nov. 9, 1951

THE EVOLUTION OF MODERN SLITTER-WINDERS
Page 20

PROBLEMS AND ADVANTAGES OF HOT STOCK REFINING
Page 28

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1. BENZOPURPURINE 4 B EXTRA CONC—

as well known as Time—is still the most economical color for beater dyeing deep reds on all types of pulp. Especially recommended for wrapping, poster and tissue papers.

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useful for covering up shives on ground wood papers. Widely used as a base for bright reds on construction, poster and wrapping papers. Has few equals as a calender stain or for dip-dyeing tissues.

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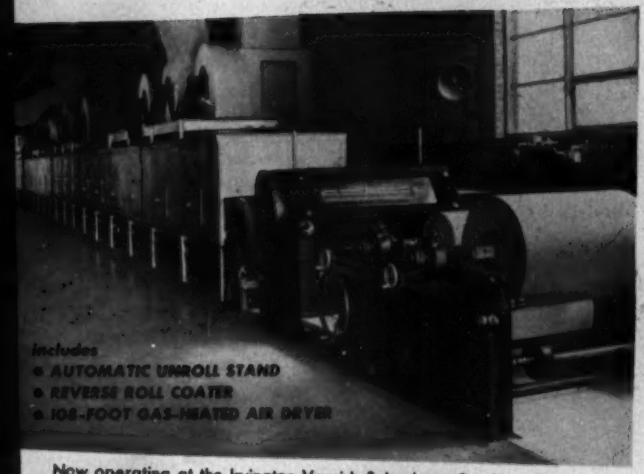

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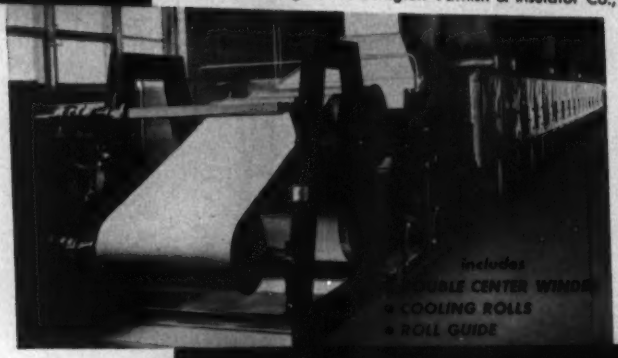

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MAINTENANCE COSTS are dealt a double blow by this new line of Allis-Chalmers squirrel-cage induction motors. First, its protective design features minimize the need for maintenance operations. Then, its planned accessibility cuts the cost of doing the maintenance work.

How Maintenance Is Reduced

In these motors, protection begins with drip-proof construction. But it does not end there. Air discharge openings in the stator yoke are given the added protection of removable louvered panels. Air intakes in the rigid cast iron end shields are located so as to prevent injury to the windings by mishandled tools or other objects. Capsule-type bearing housings protect the bearings and oil supply when the windings are being cleaned. The capsules can remain sealed against abrasive dirt throughout the cleaning operation.

How Costs Are Cut

This added protection has been achieved without sacrificing accessibility. One man can perform all routine maintenance operations. To check the air gap he simply removes a few screw-type plugs from the bearing end shields.

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Paper TRADE JOURNAL

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VOL. 133 NOVEMBER 9, 1951 No. 19

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NEXT WEEK

Sulphur saved is Sulphur in stock. Walter Birchard, Fraser Companies has made a critical analysis of how Sulphur can be saved in the acid plant. It's the first place to go to work and probably is the easiest, quickest and cheapest.

Everyone is looking for improvements and many are making them. Robert P. Goodale reports on an improvement in wet strength resins.

REMEMBER THESE DATES

NOV. 26 to DEC. 1: 23rd Exposition of Chemical Industries, Grand Central Palace, New York, N. Y.

DEC. 2-5: American Institute of Chemical Engineers, Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N. J.

FEB. 17-21: American Pulp & Paper Assn., Annual Meeting, Waldorf-Astoria Hotel, New York, N. Y.

FEB. 18-19: Salesmen's Assn. of the Paper Industry, Annual Meeting and Luncheon, Waldorf-Astoria, New York, N. Y.

FEB. 18-21: Technical Assn. of Pulp and Paper Industry, Annual Meeting, Commodore Hotel, New York, N. Y.

MARCH 16-18: American Institute of Chemical Engineers, Atlanta Biltmore Hotel, Atlanta, Ga.

MARCH 24-26: The National Paper Trade Assn., Annual Meeting, Waldorf-Astoria, New York, N. Y.

MAY 5-8: Third Coating Conference of the Technical Assn., of the Pulp and Paper Industry, at the Sherman Hotel, Chicago, Ill.

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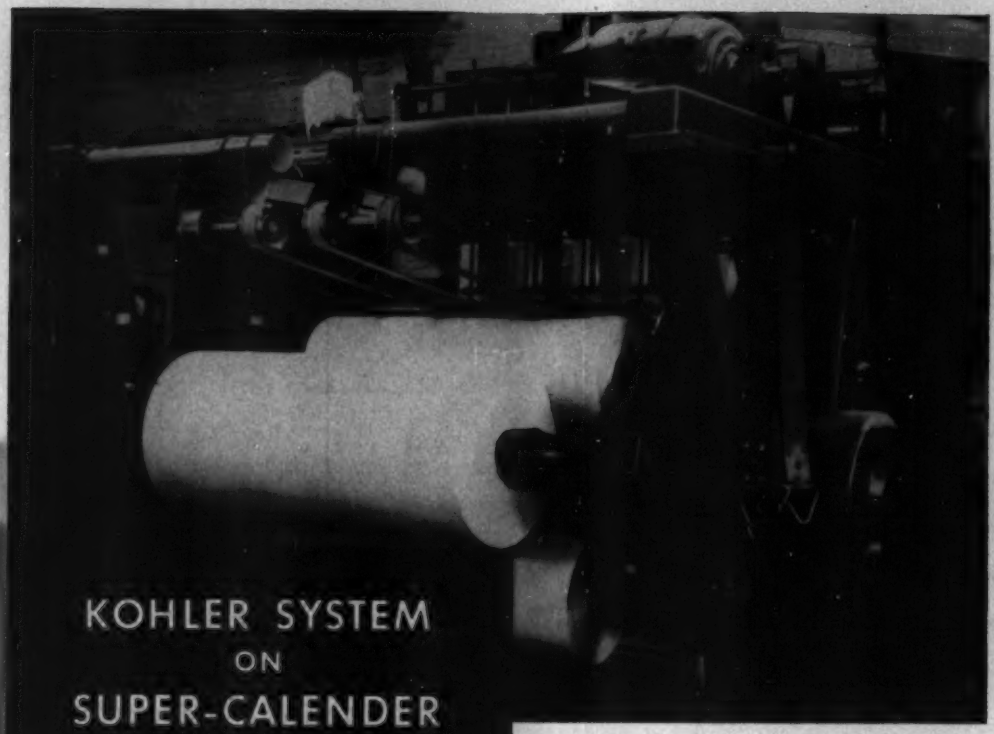


KOHLER SYSTEM ON SUPER-CALENDER

The Kohler System—combination unwinding and winding reel—on a super-calender at a northern coating mill, should arouse the interest of other mills operating super-calenders.

This equipment assures constant uniform tension. It eliminates down time due to loading and unloading. It has brought about a reduction in "snap offs." It has very substantially increased production.

Operating Procedure

The reel unwinds from the upper (rear) position under control of the Kohler running belt tension. The calendered web is rewound on the bottom (rear) position under control of the winder motor mounted above the machine.

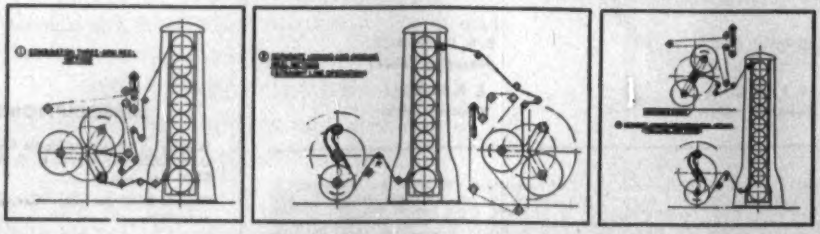
Unloading of calendered rolls and loading of uncalendered rolls take place at the front position by means of an electric hoist and while the stack is running. Roll cores are chucked in ball bearing spindles without the use of shafts.

While the stack is operating, splice is prepared on the fresh roll, which roll is pasted at threading speed to the expiring web. A momentary stop is then made to strike over the winding web to the core of the roll just exhausted. Time—a matter of seconds instead of the several minutes usually required.

Kohler System combination unwinding and winding reels are in service on a number of super-calenders—at paper mills and converting plants.

For more complete data write—

DILTS MACHINE WORKS, Fulton, N.Y. (K)



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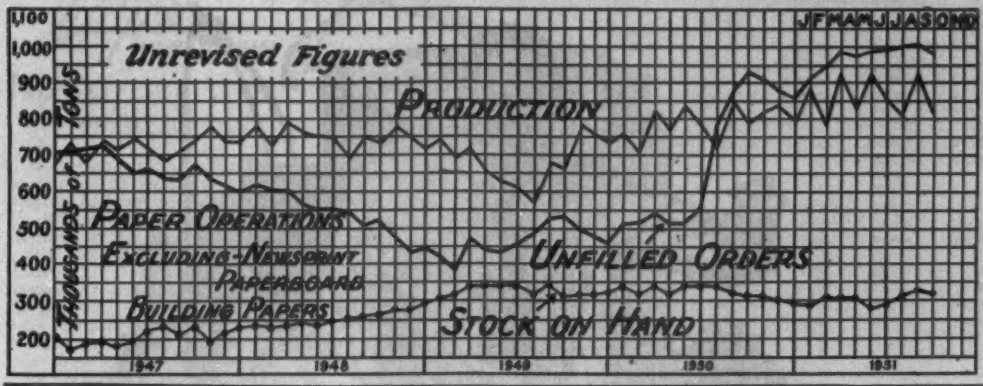

Brief of Important Figures

Source	Production	WEEK ENDING Oct. 27, '51	Sept. 29, '51	Oct. 28, '50
APPA	Paper Production Percent Capacity[a]	100.9	100.3	101.1
	Unbl. Kraft Paper Production Percent	102.3	101.8	103.4
NPA	Paperboard Operating Ratio Percent Inch Hours	85	90	104
		Sept. 1951	**Aug. 1951x**	**Sept. 1950**
APPA	Paper Production[e] (Except Newsprint and Building Papers) ....Tons	821,000	894,388	766,000
	New Orders ....Tons	811,000	853,755	820,000
	Unfilled Orders ....Tons	986,018	986,263	932,750
	Shipments ....Tons	811,000	895,313	772,000
		Sept. 1951	**[x]Aug. 1951**	**Sept. 1950**
NPA	Paperboard Production ....Tons	816,356	1,112,731	877,945
	New Orders ....Tons	825,249	1,081,321	872,012
	Unfilled Orders ....Tons	458,150	470,841	714,877
	Our Customers Activities Index[1]	**Latest Mo.[c]**	**Previous Mo.[c]**	**Year Ago[c]**
FRS	Manufactures Total Index	230	234	221
	Durable Mfg. Index	272	267	249
	Nondurable Mfg. Index	197	190	198
	Chemical Products Index	304	301	265
	Mfg. Food Products Index	184	176	189
	Printing and Publishing Index	169	155	161
ODC	Magazine Advg.-Printer's Ink Index	376	368	341
	Retail Sales Combined Adjusted Index	381.1	372.0	369.3
	Drug Index	244.4	247.3	235.4
	General Merchandise Group Index	417.6	402.8	406.2
	Grocery and Combination Index	452.8	439.1	402.2
	Prices Index			
BLS	Consumers Price Index[1]	185.5	185.5	173.4
	Wholesale all Commodities[2]	178.0	179.5	166.4
	Wholesale Foods[2]	187.3	186.0	174.6
	Commodities other than Farm Products and Foods[2]	167.3	168.7	155.5
	Wholesale Pulp and Paper[2]	198.7	197.2	163.9
	Purchasing Power of Dollar, Consumers Prices[1]	53.9	53.9	57.7
	General Activity Index			
FRS	Mfg. Production-Worker Payroll	429.4	425.5	394.4
	Unemployment Compensation Initial Claims (M)	950	1,086	641
	Miscellaneous Carloadings–Thousands of Cars	1,533	1,454	1,574
	Electric Output (Million KW hr.)	37,510	35,435	33,943
PTJ	Average 32 P & P Common Stocks as of Nov. 3	$38.40	$40.97	$34.43

[1] 1935-39=100 Unadjusted Index
[2] 1926=100
[c] New 6-7 day basis
[d] For Five Weeks.
[e] For details see APPA Monthly Statistical Summary—September 1951 Estimated Figures.
[f] Latest Month Available on Request
[x] Revised figures

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Paper TRADE JOURNAL

TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, November 7, 1951.

Market study of the past months has been aimed at measuring the dip of demand for paperboards and peering for indications of weakness in other segments of the industry.

The pattern of thinking is that if demand for the industry's accepted barometer — paperboards — be sharply cut, papers for wrappings will fall next, fine papers will soon follow; and if paper and board demand recedes, then pulp can't be far behind.

Our reasoning has been that current peak output—which preliminary estimates set at 1,983,000 tons of paper and board for September 1951 — plus scheduled capacity increases of 3.3 percent for 1951, 4.8 percent for 1952, and 2.9 percent for 1953 — might amount to serious overproduction during a recessive trend in consumption.

Pressing the point further, we have emphasized the need of keeping the industry foreign-trade minded, if only for the purely selfish reasons of survival. A potential world market also is hungry for our product: book papers, newsprint, bonds and krafts, boards and products and pulps; a potential which is in almost total eclipse to what NPA terms "essential civilian use."

Allocation for Export Urged By NFTC

The need for allocating for export was stressed in the Final Declaration of the 38th National Foreign Trade Convention held in New York last week which holds that "the restoration of a normal and economic basis for the sale abroad of American goods and services is essential to our national interest. The Convention is unalterably opposed to the uneconomic practice of encouraging exports by Government gifts, loans and subsidies."

Urged by the Convention was that "during the present emergency, American industrial enterprises allocate for exportation a fair and reasonable share of their output . . . and that the Government encourage and facilitate such exportation. It is especially important that this be done in the case of those countries which produce strategic materials required for our own defense effort. Beyond this, a continuing flow of exports is essential as a means of maintaining foreign outlets for American goods in anticipation of the need for such outlets when the present emergency ends."

Export Licensing and Priorities

In Section X of the Final Declaration, the Convention recognized "the necessity of governmental regulation of the flow of foreign trade during the current emergency," but called on the Government "to keep such controls at the absolute minimum consistent with national security. The exercise of control over the flow of goods in international trade is basically contradictory to the American concept of freedom of enterprise," the Convention held, "and destructive of competition and initiative, and should be imposed only when no alternative is available."

Also recommended by the Convention was that export price controls be framed and administered in conformity with established trade practices, that there be no further delay in the issuance of necessary amendments to existing regulations.

It also went on record that "rollbacks of export mark-ups, as required by present regulations, are doing serious damage to established trade patterns and practices," and urged that, under CPR 61, the base period permitted for calculation of mark-ups should be "alternative quarters" and not a "single quarter" for all exports as at present.

These and other issues critical to the national defense and welfare were covered in the 19 sections of the Final Declaration will be pursued by the Council which gave as its purpose: "to fortify and implement our foreign policy, and to encourage, in the process, the development of an optimum flow of foreign trade."

Paperboard Output Dips to 85%

For the week ended October 27, percent of activity dropped from 89 to 85 percent, though a gain of 16,000 tons in backlog was chalked up.

The five boxboard mills which have been on strike since August 1 were still out at press time. Other large producers have closed temporarily because of lack of orders. Some marginal mills are reported to be closed permanently, a casualty to lower-cost producing mills, as well as to market conditions.

There is no discounting the fact that corrugation, liners and other boards are wrapped around the huge stocks of durables which are stockpiled for the next several months, at least. However, one must not fail to consider that new integration production of liners and containers is getting underway in the South, also that steady output of other large mills is at a generally satisfactory level, though at somewhat lesser pressure compared with post-Korean levels.

Unbleached Krafts and M-72

As had been expected, in view of the softness of demand for southern wet pulps, some changes in the wood pulp order, M-72, are reported to be under consideration.

If approved, the 3 percent reserve pro duction will be reduced in the fourth quarter of 1951 to 2 percent; inventories of North American unbleached krafts will be raised from 45 to 60 days, based on estimated consumption in the first six months of 1952; and the carry-over proviso Section 5(a)—which says that "if a person's actual consumption of such material in any calendar quarter subsequent to July 1, 1951, falls below 95 percent of his base consumption, he may use an additional amount equivalent to such deficiency in the next succeeding calendar quarter to maintain his average use at a 95 percent rate—that will be eliminated.

—E.P.N.

Table I
WOODPULP: U. S. PRODUCTION, CONSUMPTION, INVENTORIES, AUGUST, 1951
(Tons of 2,000 pounds)

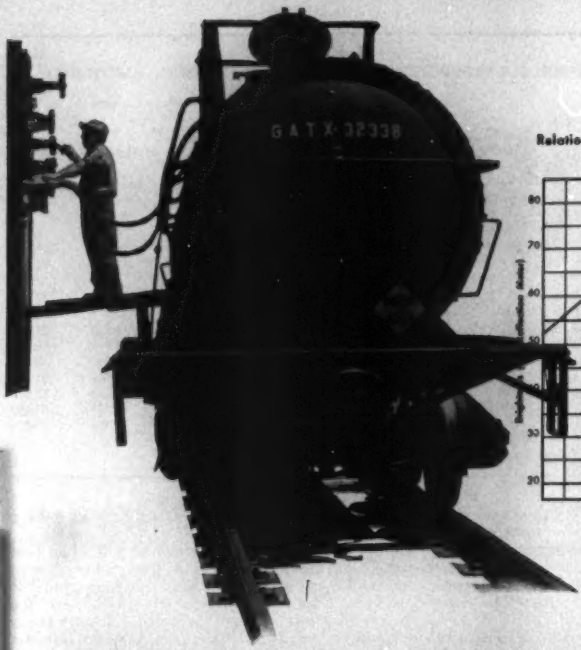
Grade	U. S. Production Tons	% of Base	Consumption in paper & bd. manuf.	End of Month Inventories: At pulp mills	At pulp mills: For later sale	At paper & bd. mills: Aug. 1951	At paper & bd. mills: July 1951
Total	1,415,183	*85.3	1,508,034	100,141	22,480	506,706	482,429
Spec. Alpha & Dissolving	50,355	83.9	2,136	9,865		9,386	9,838
Sulfite, Total	214,761	85.6	273,431	26,445	7,468	198,035	189,769
Bichd., Total			176,083	15,831	4,647	82,422	80,249
Softwood							
Hardwood							
Unbichd.			97,346	10,614	2,821	115,613	109,520
Sulfate, Total	741,554	89.8	792,910	24,692	3,323	216,053	204,312
Bichd. Total			204,065	10,958	2,046	105,993	98,189
Semi-bichd.			31,683	471		8,193	8,926
Unbichd.			557,162	13,263	1,277	101,867	97,197
Soda	38,255	80.0	42,617	1,065	168	13,781	11,826
Groundwood	205,229	78.9	232,310	34,596	2,168	59,139	58,683
All Others	165,029	81.1	164,680	4,482	9,361	10,312	8,801

Based on Bureau of Census figures.

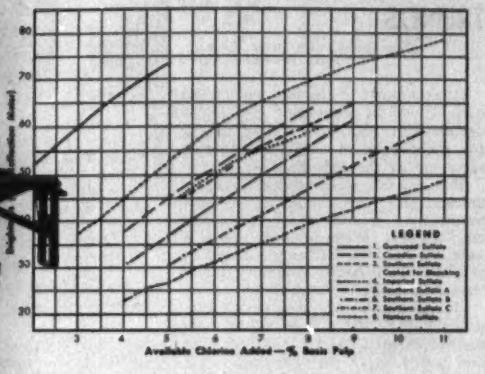
Paperboard Production (Tons)*

	Oct. 27 1951	Oct. 20 1951	Oct. 28 1950
Production	203,278	217,734	340,131
New Orders	184,971	168,866	221,590
Unfilled Orders	402,751	429,639	694,741
% of Activity	85	89	104

* Source: National Paperboard Assn.



Relation of Brightness to Available Chlorine Added in Single Stage Hypochlorite Bleaching of Several Sulphate Pulps



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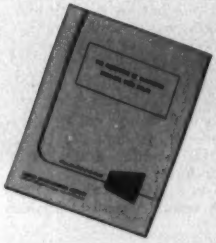
Hooker Chlorine and Caustic Soda, produced in the efficient "S" Cells at Niagara Falls and Tacoma, are well suited to your processing needs. They are shipped in properly conditioned and inspected tank cars, on carefully planned schedules that tie in with your production needs.



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News of the Week

Paper TRADE JOURNAL

MONADNOCK PLANS TENN. MILL

Elizabethton, Tenn., will vote November 15 for approval of a $20 million bond issue to finance construction of a paper mill.

The Monadnock Paper Mills, Inc., Bennington, N. H., has already taken options for the purchase of a site near Elizabethton for the construction of a plant to produce wrapping paper and has engaged the H. K. Ferguson Co. of New York City as engineers and builders. Ferguson engineers have already made a preliminary survey. Construction is to begin as soon as engineering and financial arrangements have been completed.

The plant would be built on a 75-acre site near a stone quarry on the Watauga River.

MORE ON QUEBEC MILL PLAN

OTTAWA—Edouard Simard, wealthy Canadian industrialist of Sorel, Que., is reported to be seriously interested in backing a plan to establish a new newsprint paper-producing plant on the north shore of the St. Lawrence River in Quebec, with the plant's output to go exclusively to European customers.

Likewise, Swiss interests, represented by Alfred Huber and R. Trouffer, both of Zurich, are also reported to be seriously considering the establishment of this new plant in Canada.

MEAD SELLS MANISTIQUE MILL

MANISTIQUE, Mich. — The Mead Corp., Dayton, Ohio, has signed an agreement for the sale of the Manistique paper mill to the Trenton Times Corp., Trenton, N. J. Mead will continue to operate the mill until early 1952. At that time the new owners will gradually change over the operations to the production of newsprint for export to publishers in South America. The mill has a capacity of 80 tons per day. The transaction was negotiated by Vincent J. Manno and George Romano, New York brokers.

The Trenton Times Corp. publishes *The Trenton Times* and *The Sunday Times-Advertiser*—two of New Jersey's oldest newspapers.

The new owners do not contemplate making any changes in the present management and operating personnel. In view of the continuing need for newsprint in South America, it is planned to operate the mill at maximum capacity.

Until March of this year the mill was operated under the name of the Manistique Pulp & Paper Co. and since then as a Division of The Mead Corp. The enterprise was founded in 1916 by W. J. and F. E. Murphy, at that time owners and publishers of the Minnesota Tribune Co., to supply newsprint for their growing newspaper. F. E. Murphy was president of Manistique Pulp & Paper Co. until his death in the early 1940's.

Mead acquired the mill in 1943 and changed its operation to the manufacture of hanging raw stock for the wallpaper industry, and other groundwood specialty papers. Improvements made since 1943 include: a new wood preparation department, a new fourdrinier section, the installation of diesel generating units, modernized screening equipment in the pulp mill and on the paper machine, a modernized finishing department, a large paper warehouse, and just recently a new wood yard layout has been completed to facilitate the delivery of truck and rail wood with modern wood handling equipment. The mill employs 170 people.

BROMPTON EXPANSION

OTTAWA—Brompton Pulp & Paper Co., Ltd., is going ahead with plans to expand its property at Red Rock, Ont., as well as to modernize its plant at East Angus, Que. The estimated cost of the expansion program at Red Rock is approximately $15 million, including housing facilities to accommodate the new employees. Additional production as a result of this program may become available during 1954.

The expansion program at Red Rock will include a high-speed modern kraft paper machine, an increase in the kraft pulp capacity, including semi-chemical pulp and the reconversion of the existing kraft paper machine to the manufacture of newsprint.

The present capacity of Red Rock consists of 80,000 tons of kraft board and 20,000 tons of surplus pulps. As a result of this expansion the output of finished products at Red Rock will be increased to 150,000 tons of kraft board and 60,000 tons of newsprint per annum.

The semi-chemical pulp plant will make use of hard woods inasmuch as the company realizes the desirability of utilizing all species of wood available on the company's limits. As a result the capacity of the company's limits will be fully utilized on a sustained basis.

GAYLORD ADDS TWO MILLS

The Gaylord Container Corp., St. Louis, Mo., has completed its acquisition of The Fairfield Paper and Container Co., with plants in Baltimore, Ohio, and Beaver Falls, Pa., and The Dresden Paper Mills Co., Dresden, Ohio.

This adds two paper mills and two container plants to Gaylord's operations, which now comprise three paper mills and 17 converting plants, strategically located throughout the U.S.A.

Gaylord's present plans are to operate The Fairfield Paper and Container Co. and The Dresden Paper Mills as before. Mr. Henry Custer will continue as vice-president and general manager of the two companies, with his headquarters at Baltimore, Ohio.

The Gaylord Container Corp. was formed in 1937 as a merger of Robert Gaylord, Inc., manufacturing high-grade corrugated shipping containers and other kraft paper products, and Bogalusa Paper Co., Inc., with extensive pulp and paper mill operations at Bogalusa, La.

The Fairfield Paper and Container Corp. was organized in 1907 and is a successful manufacturer of liner board, chip-board and corrugated boxes, with distribution over many states. The Dresden Paper Mills were established in 1916 and produces straw board.

SOUTH LEADS IN PULPWOOD

The South now produces 60 percent of the total yearly U. S. cut of pulpwood, and also leads all other regions in mill capacity needed to convert the raw wood into pulp. This is made clear by a U. S. Forest Service report prepared by William S. Stover and released by the Southern Forest Experiment Station, New Orleans, and the Southeastern Forest Experiment Station, Asheville, N. C.

The South's 1950 pulpwood cut hit an all-time high of 12½ million cords, thus topping by at least a million cords the previous record year of 1948. Total U. S. cut in 1950 was 21 million cords, Mr. Stover reported.

Leading southern producer is Georgia, whose 1950 harvest of 2,200,000 cords made up 18 percent of the South's and 11 percent of the nation's cut. Mississippi, with a cut of 1,700,000 cords, ranked second. Florida and Alabama were next, with about 1,300,000 cords apiece. Other million-cord States were North and South Carolina and Virginia.

St. Regis Kraft Center Expansion

The world's largest completely integrated wood to multi-wall bag operation at North Pensacola, Fla., is now being enlarged. The present installation includes two complete kraft pulp and paper mills plus a bag plant that produces practically all types of multi-wall bags, sugar pockets and shipping container bags to be used for filled sugar pockets.

The oldest unit of this group was built in 1940 as the Florida Pulp and Paper Company and was acquired by St. Regis in 1946. The location and design of this mill made its expansion impracticable, so in 1948 a complete new kraft pulp and paper mill was built on the same site a short distance from the old mill. The latter is still known as the Florida mill and the new unit is called the Alabama mill. The bag plant was also built at this time. The new mill was designed so that it could be readily expanded. This expansion is now underway. The original buildings were all constructed so that they could be readily enlarged and the paper machine building, washer room, screen room, digester building, power plant and bag plant are all now undergoing this expansion. All of the new construction is being done by Merritt-Chapman & Scott Corp.

The existing wood yard as well as barking drums, chippers and chip screens, have sufficient capacity to carry the increased production, but all other processes in the mill will be expanded.

Seven new digesters, 10½ feet in diameter by 40 feet overall height, will be installed to supplement the five existing digesters of the same size. Both old and new digesters have chip capacities of 2700 cubic feet and will yield 7¾ tons per blow. All were built by Chicago Bridge and Iron Co.

An extension of the west end of the digester building is now being constructed to house the new digesters. Thus all 12 digesters will be arranged in a single line.

A new blow tank, identical with the original installation, was also built by Chicago Bridge and Iron Co. This unit is 24 feet in diameter with a straight side height of 25 feet and a bottom cone height of 18¾ feet. The capacity will be two blows or about 15 tons at 3 percent consistency.

The blow heat recovery system will include a Foster-Wheeler jet condenser and heat exchanger with a Chicago Bridge and Iron Co. accumulator, 20 feet in diameter with a straight side height of 30 feet.

A duplicate of the present washing system, consisting of an Impco three stage system with vacuum cylinders 8 feet in diameter and 12 feet long, is now being installed in the new washer building addition. The new system will have a submerged knotter preceding the first stage and will be equipped with a Ross hood and ventilating system.

The screen room addition is being equipped with 16 Impco flat screens with Dunbar drives. Each screen has fourteen plates. Screened stock will be thickened on two Impco 8 ft. by 8 ft. deckers.

Paper Mill

New stock preparation equipment consists of six Shartle Miami Jordans and four Claflin Refiners. There are two tile stock chests, each equipped with 60-inch diameter propeller type agitators.

The existing paper machine is a Black - Clawson Fourdrinier equipped with a wire 110 feet long by 210 inches wide. There are 60 five-foot paper dryers and 8 five-foot felt dryers.

A Beloit stock flow system, inlet and air-loaded pressure headbox were recently added to number one machine to replace the gravity head box which had been on the machine since it was built in 1948.

Foundations and sole plates for new Bagley & Sewall paper machine. Number one machine at left.

The new paper machine will be a Bagley & Seward Fourdrinier equipped with a Pusey & Jones flow spreader and pressure inlet. This machine will trim 210 inches and will have a total of 90 dryers. The Fourdrinier wire will be 120 feet long by 228 inches wide. This machine is designed to operate up to a speed of 2500 r.p.m. It will be considerably longer than number one machine due to the longer wire and more dryers. The additional length will cause an extension at the dry end of the machine since the machine head boxes will be directly opposite.

Recovery System

A complete new recovery system is now being installed. Much of the equipment will exactly duplicate that now in operation but in a few in-

Exterior view showing new paper machine building addition at left and center with screen room and washer room construction at right rear.

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Don't let any of *your* precious fibres get away. Make sure your Bird Save-All System is of adequate capacity and in good working order. Check with us if there's any doubt about it.

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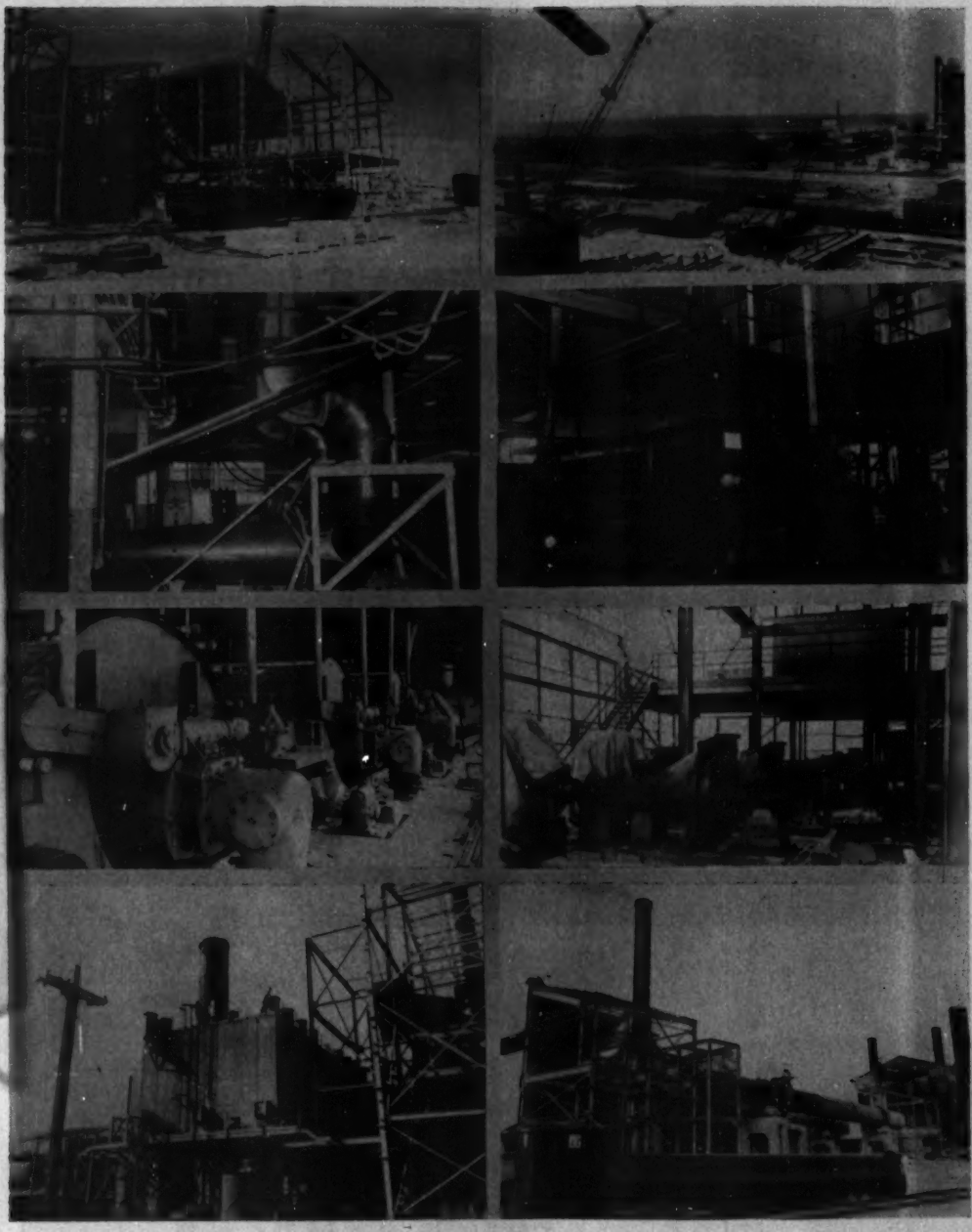

ST. REGIS CRAFT CENTER EXPANSION

Reading from left to right, top to bottom

Figure 1—Completed steel framework of boiler house left and generator room right. Figure 2—Dryers for the new paper machine and new digesters for the pulp mill are shown in yard awaiting installation. Figure 3—Fan pump and new pressure stock flow system on number one paper machine. Figure 4—New Beloit air-loaded pressure headbox. Figure 5—New Impco three-stage vacuum washing system. Figure 6—Claflin refiners and Shartle Miami jordans, partially installed in beater room addition. Figure 7—New precipitator, center and recovery furnace construction at right. Figure 8—Construction of new lime kiln, foreground with existing kiln at rear.

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stances the new equipment is slightly larger.

The new evaporator will be a Swenson six-body sextuple effect system with the first two effects made from stainless steel. This is practically an exact duplicate of the system now in operation.

There are two new Babcock and Wilcox recovery furnaces under construction. These units are each about 33⅓ percent larger than the present furnaces. Each of the new units will generate 60,600 lbs. of steam per hour.

A Dorr continuous causticizing system will supplement the existing unit now in operation.

Both the new and old systems have three tray, four compartment, white liquor clarifiers and lime mud washers 24 ft. diameter and 24 ft. high. The green liquor clarifiers are 22 ft. diameter, 24 ft. high, and the dregs washers are 16 ft. diameter by 24 ft. high.

The new Oliver lime mud filter is 6 ft. diameter with a 4 ft. face and the lime kiln is a Vulcan, 140 ft. long by 8 ft. diameter fired with natural gas.

Steam and Power

The new boilers will have more steam generating capacity than those now in operation. As previously mentioned the recovery boilers will produce a total of 120,000 lbs. per hour as against a total of 90,000 lbs. per hour from the existing units. The new Babcock and Wilcox power boiler will be a duplicate of the 150,000 lbs. per hour unit now operating. A new bark burning boiler will produce 60,000 lbs. of steam per hour at the standard pressure of 450 p.s.i. The existing bark burner produces 30,000 lbs. of steam per hour at 160 p.s.i. which can thus be used only for pulp cooking. A new gas fired superheater will supplement the two that are now in operation.

There are two Westinghouse turbogenerators, each producing 6250 k.v.a. Both are equipped with condensors. One of the two new Westinghouse generators being installed will condense, the other will exhaust at 50 p.s.i. Since this mill has a very good balance of synchronous and induction motors the power factor is practically unity and the k.v.a. figures given may be considered almost as KW.

Bag Plant

The bag plant is being enlarged to about the same extent as the pulp and paper mill. At least six new production lines will be installed in a two-story addition to the present building. The new two-story part will be 360 ft. long by 144 ft. wide plus a one-story office section, 360 ft. long by 36 ft. wide. This part is expected to be in operation by late 1952.

GOVERNMENT GOSPEL

Announce Wood Pulp Export Quotas

Quotas for the export of wood pulp in the fourth quarter of 1951 were announced November 2 by the Office of International Trade, U. S. Department of Commerce.

The quota for dissolving and special chemical grades of wood pulp is 7,000 short tons, and for unbleached sulphate, 25,000 short tons. The same quantities were made available for export in the third quarter.

For bleached and unbleached sulphite (paper grades) and bleached and semi-bleached sulphate, the fourth quarter export quota is 7,000 short tons —lower by 3,000 tons within the third quarter quota. Further tightening of the supply of these grades of wood pulp necessitated the reduction, OIT explained.

Coated Paper Price Formula

Members of the Coated and Processed Paper Industry Advisory Committee, at their second meeting with OPS officials, checked over in detail provisions of a proposed tailored regulation for their industry under which they would price their products by formula.

The formula would include material, conversion and delivery costs plus margin.

It was proposed that manufacturers use the formulas they had in effect during the base period of January 25 to February 24, 1951, and employ the same margins that they utilized during this period.

Their material and conversion, or manufacturing, costs used in the formula would be actual costs, except that in no event might the material costs exceed the ceilings existing during the base period, until such time as OPS might issue dollars-and-cents ceilings covering the materials. When such ceilings are issued by OPS, the spelled out ceiling prices would be used as the material costs.

The regulation, patterned after CPR 84, covering Certain Converted Paperboard Products, would apply to about 35 manufacturers whose products were valued in 1947 at $25 million.

Coated and processed papers include metallic coating, pyroxylin coating, mica coating, suede, dullcoat, semi- and top-size waterproof, friction glazed, flint glazed, fancy cover and decorated foil papers, and laminated combinations of these with paper and cloth.

The regulation would not cover coated book paper and coated paperboard, which are priced under other regulations.

Shipping Sack Pricing

Effect on their industry of Ceiling Price Regulation 88, covering unbleached kraft paper, was discussed with OPS officials by members of a subcommittee of the Paper Shipping Sack Industry Advisory Committee, preparatory to the drafting by OPS of a tailored regulation for the industry.

Committeemen reported that ceilings on 40 pound kraft paper, determined under CPR 88 by applying specified differentials to ceilings spelled out for 50 pound paper, would tend to increase their material costs, and would squeeze them if an attempt is made to maintain prices for paper shipping sacks established under the General Ceiling Price Regulation.

Kraft paper manufacturers, in their committee meeting asserted that the differentials allowed for 40 pound paper and other lighter weights were not adequate to cover the difference in cost between these weights and 50 pound paper.

The subcommittee pointed out that the industry normally sells at closely competitive prices and said that the proposed tailored regulation should be drawn so as not to result in divergent prices. Committeemen urged that OPS take into consideration any increase in their costs for lightweight paper that might be experienced under CPR 88.

CMP Information Office Moves

WASHINGTON, D. C. — The Central Military Procurement Information Office, a branch of the Office of Small Business of the Munitions Board, is now in the Pentagon, at Washington. The agency was moved there from its former location in the Old Post Office Building, Washington, at the request of businessmen who come to the Pentagon seeking ways to share in the defense production program.

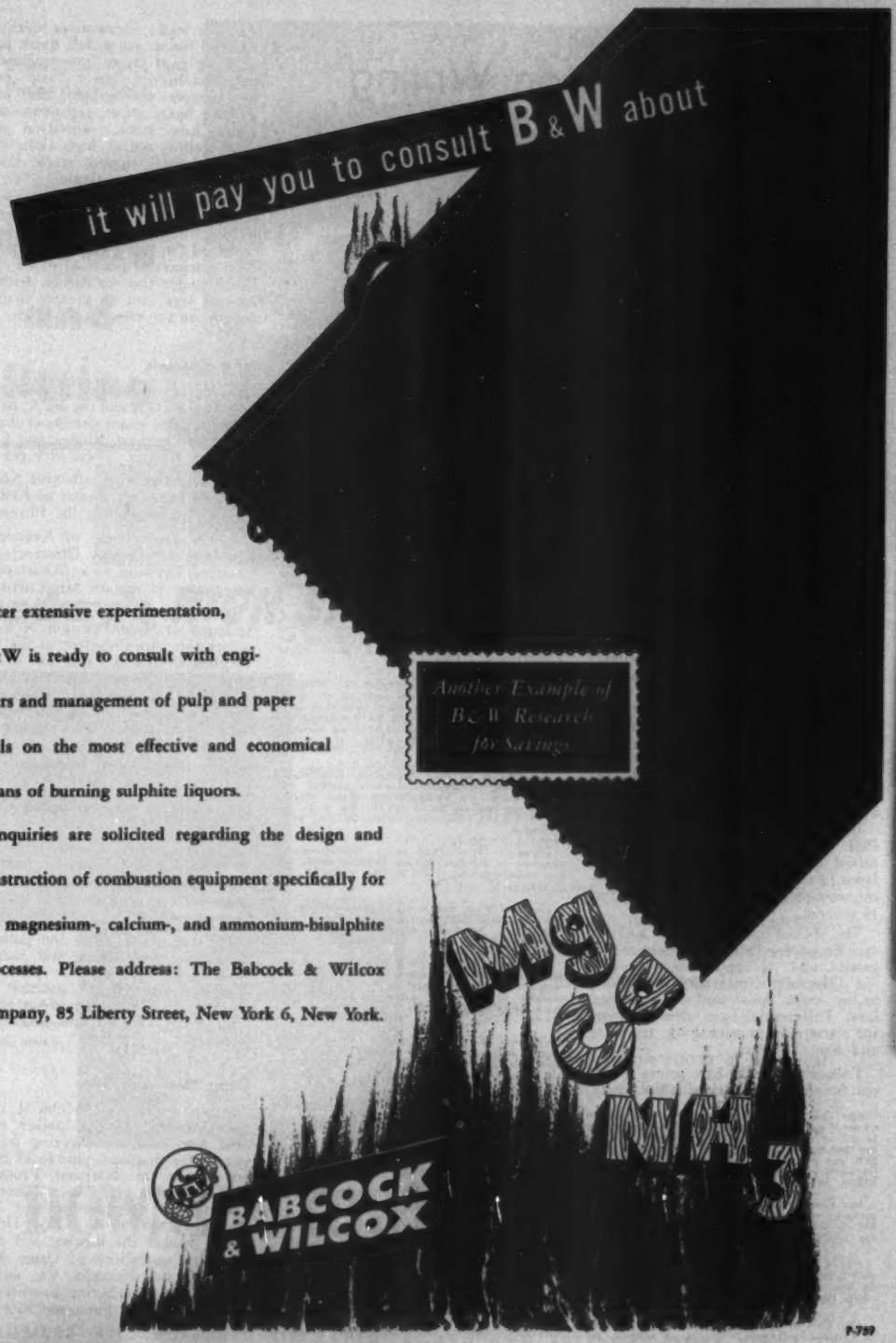
Canadian Exports

OTTAWA — Canadian exports to the United States fell in September below a year earlier for the first time in almost two years, amounting to $186,730,000 compared with $192,789,000. In the nine months, shipments aggregated $1,691,341,000 as against $1,433,082,000 in 1950.

Exports to the United States were down 3.2 percent in the month, but rose 18 percent in the first nine months of the year, while shipments to the United Kingdom advanced 72.5 percent in September and 29.7 percent in the cumulative period. Exports to Europe were doubled in value in the month and were about four-fifths larger in the nine months, while shipments to Latin American countries were up 11 percent in September and almost 30 percent in the nine months.

Canada's 1951 Newsprint Production

OTTAWA — The secretary of the Newsprint Assn. of Canada, Murray Savage, Montreal, Que., has predicted that Canada's newsprint production for 1951 will be 9,600,000 tons or an increase of 60 percent over the 6 million tons produced in 1945.



After extensive experimentation, B&W is ready to consult with engineers and management of pulp and paper mills on the most effective and economical means of burning sulphite liquors.

Inquiries are solicited regarding the design and construction of combustion equipment specifically for the magnesium-, calcium-, and ammonium-bisulphite processes. Please address: The Babcock & Wilcox Company, 85 Liberty Street, New York 6, New York.

P-789

Set Ceilings on Writing and Other Fine Papers

The Office of Price Stabilization has announced dollars-and-cents ceilings for manufacturers on 53 specified grades of writing and other fine papers and also prescribed means of determining ceilings on other grades.

The ceilings, stipulated in Ceiling Price Regulation 91, effective November 10, 1951, apply to an important segment of the paper industry which in 1950 produced 1,200,000 tons of paper valued at $360,000,000, roughly 11 percent of the domestic production of all kinds of paper exclusive of paperboard.

The spelled out ceilings are at the same general average level as prices determined under the General Ceiling Price Regulation, GCPR, which froze prices existing in the period December 19, 1950, to January 25, 1951. The dollars-and-cents pricing of major grades will tend to iron out disparities frozen into the price structure under GCPR.

Ceiling prices for paper merchants and distributors will be fixed in a companion regulation which will cover wholesalers' prices to manufacturers, converters, printers and retailers. Retail ceilings on writing and other fine papers, and, for the time-being wholesale ceilings, are determined under the GCPR or Supplementary Regulation 29 to GCPR.

Between June 1950, and the January 1951 GCPR freeze, manufacturers raised their rag content paper prices from 12 to 33 percent and their chemical woodpulp paper prices from 12 to 19 percent.

The spelled out base prices apply to specific grades listed and their related grades, and, by application of spelled out differentials, to grades which vary in tint, color, finish and other particulars. Differentials are also set forth for variations in packaging, trimming and size of orders.

Following are the base prices spelled out for the key grades of white paper:

Rag Content Bond—ream sealed, trimmed, in standard cartons, per hundredweight—Basis weight 17 lbs. or heavier, extra 100% rag $57.50, 100% rag $49.50, 75% rag $38.00, 50% rag $29.50, 25% rag $24.00; same, basis weight 16 lbs., extra 100% rag $58.50; 100% rag $50.50, 75% rag $39.00, 50% rag $30.50, 25% rag $25.00.

Rag Content Ledger—ream sealed, trimmed, in cartons, per hundredweight—Extra 100% rag $58.50, 100% rag $50.50, 85% rag $42.00, 75% rag $39.30, 50% rag $30.50, 25% rag $25.00.

Rag Content Onionskin and Manifold—ream sealed, trimmed, in cartons or cases, basis weights 14 lbs. to 18 lbs., 17"x22", per 1000 sheets—100% rag $10.90, 75% rag $8.80, 25% rag $7.50.

Rag Content Wedding—ream sealed, trimmed, in cartons, basis weight 24 lbs. or heavier, per hundredweight—Extra 100% rag $52.00, 100% rag $49.50, 25% rag $24.00.

Rag Content Index—sealed, trimmed, in cartons, not heavier than 25½x30½—340 M, per hundredweight — 100% rag $50.50, 75% rag $39.00, 50% rag $30.50, 25% rag $25.00.

Blueprint—standard wrapped rolls, per hundredweight, carload lots—100% rag, substance weight 17 lbs. $46.00, substance weight 20½ lbs. $45.00, substance weight 24 lbs. $45.00; 50% rag, substance weight 17 lbs. $29.50, substance weight 20½ lbs. $28.50; 25% rag, substance weight 17 lbs. $24.00, substance weight 20½ lbs. $23.00. Slightly higher prices are spelled out for less than carload lots.

Rag Negative Paper Base Stock—standard wrapped rolls, per hundredweight, any quantity —Substance weight 14 lbs. $61.00.

Rag Content Cover Papers, machine finish or antique, plain edge, 25% rag, per hundredweight —$21.25.

Chemical Wood Pulp Bond—ream sealed, trimmed, in standard cartons, per hundredweight —Basis weight 17 lbs. or heavier, air dried (watermarked) $20.00, No. 1 bond, machine finish (watermarked) $15.50, No. 2 bond, machine finish (watermarked) $14.90, plain bond, machine finish (watermarked) $14.00; same, basis weight 16 lbs., 60 cents to $1.00 higher.

Chemical Wood Pulp Ledger—ream sealed, trimmed, in cartons, machine finish, per hundredweight—No. 1 ledger (watermarked) $16.50; No. 2 ledger (watermarked) $15.90, plain ledger (watermarked) $15.00.

Chemical Wood Pulp Onionskin and Manifold—ream sealed, trimmed, in cases or on skids, 17"x22", per 1000 sheets—Basis weight 7 to 9 lbs., No. 1 watermarked $4.10, No. 2 watermarked $4.00, No. 2 unwatermarked $3.80, plain unwatermarked $3.60; basis weight 10 lbs., 20 cents additional per 1000.

Chemical Wood Pulp Papeteries, Weddings—ream sealed, trimmed, in standard cartons, machine vellum, per hundredweight—Basis weights 24 lbs. or heavier, No. 1 $20.00, No. 2 $17.00, No. 3 $16.10; same, basis weight 20 lbs., $1.00 additional.

Chemical Wood Pulp Index Bristol—sealed, trimmed, in standard cartons, machine finish, per hundredweight—No. 1 $17.00, No. 2 $14.70, No. 3 $14.25.

Chemical Wood Pulp Cover Papers—antique or machine finish, per hundredweight—No. 1 plain edge $16.25, No. 2 plain edge $15.25, No. 3 25% plain edge $14.25.

Chemical Wood Pulp Mimeo—sealed, trimmed, in standard cartons, machine finish, per hundredweight—Basis weight over 16 lbs., No. 1 watermarked $15.50, plain unwatermarked $14.00; same, basis weight 16 lbs., No. 1 $16.20, plain $14.60.

Chemical Wood Pulp Opaque Circular Paper—ream sealed, trimmed, in standard cartons, per hundredweight—Basis weight 17 lbs. or heavier $16.15, basis weight 16 lbs. $16.85.

Ceiling prices on unclassified grades are the highest prices for sales during either of the following periods: January 1 to June 24, 1950, or January 25 to September 15, 1951.

Unclassified grades include but are not limited to the following:

Anti-tarnish and related grades, Bible paper (above A grade book), braille paper, calendar roll, carbonizing (above A grade book), chart paper, cigarette paper, colored construction and school paper, condenser tissue, currency paper, drawing paper (above A grade book), extra-super index, facing and lining paper, felt finish paper, greeting card tissue, intermediate paper, manuscript cover, map cover, meter paper, photographic base paper, plotting board paper, rag news, safety paper base stock, saturation paper (rag, cotton and/or high alpha cellulose content), tipping stock, tracing paper, wet strength tissue.

Ceilings on papers which cannot be priced as related or unclassified grades by the foregoing methods may be determined "in line" with prices for the most comparable grade of paper established under the regulation, with the margin over cost no greater than the margin on the comparable grade.

NPA Appoints

Manly Fleischmann, Administrator of both the DPA and the NPA, has announced three major personnel changes in NPA's chemical, Rubber and Forest Products Bureau. These changes are:

1. The resignation, effective November 8, of Francis J. Curtis as Assistant Administrator heading the Bureau.

2. The appointment of Kenneth H. Klipstein, who is now Director of the Chemical Division, as an Assistant Administrator to replace Mr. Curtis.

3. The appointment of Lawrence W. Strattner of Mount Vernon, N. Y., adminstrative vice-president of the West Virginia Pulp and Paper Co. of New York City, as Deputy Assistant Administrator of the Chemical, Rubber and Forest Products Bureau. He replaces Gabriel J. Ticoulat, who recently was appointed a DPA Deputy Administrator for International Problems.

RFC Loans for New Newsprint Mills

WASHINGTON, D. C. — The Senate has received from Senator Hill, Dem., of Alabama, a companion bill to a House measure, providing for RFC loans for encouragement of newsprint production facilities.

The bill states it as the policy of Congress to encourage and facilitate construction of domestic plants for newsprint manufacture, and that loans could be made for as much as 50 percent of the cost of the construction involved.

Camp Named to NPA

WASHINGTON, D.C.—John M. Camp, Franklin, Va., retired lumber executive, who has been serving as consultant for Southern pine in 11 Southern states for National Production Administration, has been named as Director of the Lumber and Wood Products Division of NPA. He formerly headed the logging and manufacturing operations of Camp Manufacturing Co., Franklin, Va., and was in charge of lumbering operations in the Carolinas, Virginia and Florida at various periods.

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The Downingtown Slitter is compact, easy to operate and to maintain, practically noiseless, and produces a clean accurate sheet free from "fanning". Anti friction bearings are furnished throughout.

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Slitting and Roll Winding Fundamentals*

Eugene J. Ward

General Sales Manager, Cameron Machine Co.

Introduction

The primary function of the slitting and roll winding machine is to slit and rewind mill rolls into rewound rolls of uniform density with cleanly cut edges and to permit smooth unwinding at top speeds on subsequent processing machines. Requirements for soft, medium and hard rolls vary from mill to mill depending upon the characteristics of the material and end use of the roll. In most cases, it is desirable to obtain rewound rolls of uniform density from the core to the periphery so as to eliminate the possibility of their going out of round in shipping or handling.

There are three general classifications of mill type slitting elements, "Rotary Shear," the "Top Slitter" and the "Score Cut" method.

Rotary Shear

One of the early rotary shear methods (still used on small converting winders) consists of sharp circular knives mounted in pairs on parallel mandrels and operating in opposition to each other *(Figure 1)*. The edges of the slitter knives slightly overlap each other and are usually driven a trifle faster than the web speed. To obtain satisfactory results, the knives on each shaft must be of the same diameter and carefully adjusted for overlap and lateral pressure. If set too far apart, web breaks and ragged strip edges result. If set too tightly, knives are quickly dulled, finally, if overlap is excessive, the web is distorted and the strip edges are not cleanly cut.

Another adaptation of the rotary shear principle, still used on some mill winders, was developed by Meisel Press and Mfg. Co. The "Meisel" type of slitter *(Figure 2)* consists of a grooved driven mandrel on which cutter blades and spacers are mounted at predetermined intervals, and a front mandrel driven at high speed arranged so that its cutter blades overlap and rotate against the edge of the grooves in its opposite member. Although this method satisfactorily slit narrow webs, the foregoing objections as to maintenance, adjustment and set-up time restricted its application to long production runs at given strip widths.

To overcome the disadvantage of regrinding all blades to uniform diameter when one or more became nicked, and also to reduce the care, readjustment and maintenance required to obtain cleanly-cut edges, Chas. Koegel & Sons developed and introduced in this country the "Koegel Slitter" *(Figure 3)*. This element consists of a sharp friction driven slitter blade mounted on a free bearing; the axis of the bearing is intentionally out of parallel with the axis of the power-driven shaft on which the opposing knife is mounted; spring tension is applied to the blade to maintain constant lateral pressure when engaged. This method eliminated the critical lateral pressure adjustment and provided a means for adjusting overlap, regardless of knife diameter. Within the past two years, the Rice Barton Corp. developed a method of applying an air cylinder to the friction-driven slitter blades *(Figure 4)*. Its purpose is to reduce the manual effort and time expended in relieving lateral pressure between each pair of cutters when threading-up. The air circuit is arranged to displace each friction driven blade, except trim cutters, laterally, before a master cylinder disengages the friction cutters radially by rotating the supporting mandrel. On engagement, the friction driven blades are lowered radially; off side in relation to power driven blades. Actuation of the individual cylinders moves the friction driven blades into contact with the power-driven blades. Constant spring tension asures lateral knife pressure.

Separate motor-driven shear blades are sometimes substituted for the motor driven mandrels on wide, high-speed winders to eliminate the need for large diameter mandrels with critical speeds high enough to hold vibration to a minimum. The use of separate cutter motors also permits rapid removal of any one of the blades for replacement or sharpening. Constant speed AC or adjustable speed DC slitter drive motors may be used. In either case, the slitters are driven faster than the web to prevent the winding mechanism from dragging the web past a slower moving slitting element.

There are, of course, other minor variations of the rotary shear method, but the foregoing essentially sums up all of the principal methods classified as rotary shear.

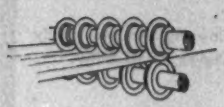

FIG. 1

FIG. 2

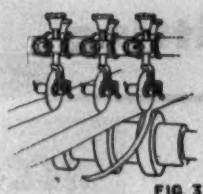

FIG. 3

Top Slitter

The second classification known as the "Top Slitter" *(Figure 5)* can only be used in combination with the actual

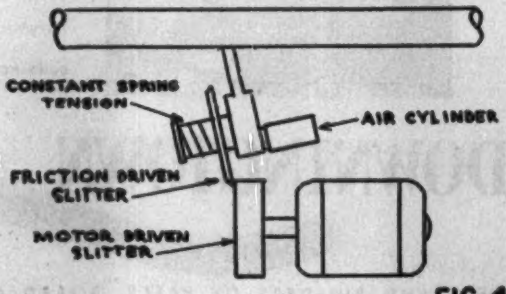

FIG. 4

* Paper presented before the Joint Meeting—Southern and South Eastern Division of the American Pulp and Paper Mill Superintendents Assn. held at George Washington Hotel, Jacksonville, Fla.

TIMELY HELP FROM TITANOX RESEARCH:

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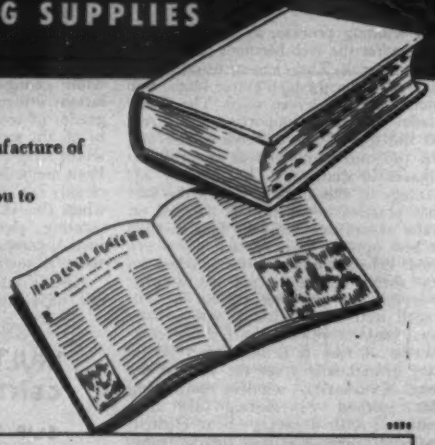

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Whatever type of paper you produce, if you need whiteness, brightness or opacity—our Technical Service Department is always available to help you get the maximum out of your TITANOX pigment supply. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; Boston 6; Chicago 3; Cleveland 15; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 9, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments, Ltd., Montreal 2; Toronto 1.

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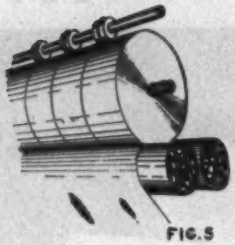

FIG. 5

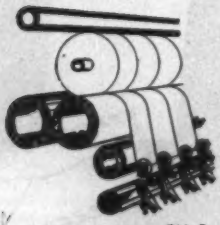

FIG. 6

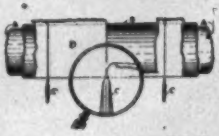

FIG. 7

roll winding process, as the slitting is done after the web becomes part of the rewound roll. The element usually consists of a sharp edged slitter blade, hub mounted, on a driven shaft. The slitter blades and their supporting shaft rest on the top of the rewinding roll and slit the oncoming web as the roll increases in diameter. The primary advantage of this method lies in the fact that positive separation is assured on webs of uniform caliper. This method is best applied when precut cores are used. When winding without cores, the top slitter blades, to prevent dulling, chipping or breaking cannot be engaged until a few initial wraps have been made on rewind shaft. After completion of run, it is sometimes necessary to manually sever the rolls at the core. Ordinarily, winders employing this method of slitting are also equipped with a rotary shear element for trim removal, as it is impracticable to take narrow trim when using the top slitter. Finally, as dusty, "wooly" strip edges are characteristic of the top slitter, its use is restricted to certain grades of work.

Score Cut

The third principal method, the "score-cut" method *(Figure 6)*, developed by Cameron Machine Co., differs radically from the systems previously described. Slitting is accomplished by means of a ball bearing mounted, semi-sharp, hardened cutter wheel pressing against the surface of a hardened, driven platen roll as the web is drawn over it. The cutter wheel, the web and the face of the platen roll all travel at the same surface speed. The cutters were formerly spring loaded for individual pressure adjustment to permit use of cutters of varying diameters. Once set, the entire bank of cutters is controlled by a single lever at the operating side. Modern score-cut winders are equipped with air-operated slitter units to assure uniform pressure to each cutter wheel regardless of defferences in wheel diameters, and to eliminate the guess-work involved in setting spring pressure.

The components of this slitting element are shown in the next illustration *(Figure 7)*. The cutter wheel has a "V" edge, slightly rounded and highly burnished. The platen roll consists of a driven core shaft on which are mounted replaceable, sectional heat-treated and ground steel forgings. The air pressure required to press the slitter edge through the web is neither sufficient to mark the hard surface of the platen roll nor to flatten the edge of the cutter. After continuous service the cutter will show a tendency to flatten and requires redressing to a semi-sharp edge. The tough surface of the platen roll generally is not marred for many years. However, should scoring occur due to nicked edges, improperly sharpened slitters, or excessive slitter pressure, they may be removed and resurfaced.

The principal advantages of the score-out slitting element vs. the rotary shear method is its simplicity and ease of adjustment when resetting for width changes. Although many installations utilize score-out on the heavier grades of board, shear is recommended to obtain squarely cut edges, provided width strip changes are at a minimum. Both methods are capable of producing cleanly-cut edges over long duty cycles, when the slitter assemblies and their rotating elements are properly adjusted, competently operated and consistently maintained.

Having covered the principal methods of slitting and noting some advantages and disadvantages of each, let us now review and discuss the varied styles of roll winding machines in paper and board mill service, referring back to slitting method only when it is integrated with the winding mechanism. Many of the older mills are even today still using a number of different winding method for substantially the same service. While many of them are fundamentally different in principle and structure, all of them have certain advantages and disadvantages. Modern winders have been designed for the purpose of incorporating the maximum advantages and an attempt has been made to minimize the disadvantages.

Center Wind

The next illustration *(Figure 8)* shows the earliest method known as the "center wind" or "multiple shaft" system of winding. The rolls are wound on center winding shafts mounted on bearings and driven by slip belt or friction clutch. The shafts are located either one above, or one behind the other, and usually a separate shaft is used for each strip.

This method had the advantages of simplicity, low initial cost, positive rewind roll separation, and provided for rewinding rolls of different diameters after culling bad sections of the web.

The production of firmly wound rolls in this system requires an excessive amount of power, as the rolls are made compact and firm only by the pull on the web. When attempting to rewind numerous strips, it is difficult to adjust uniformly the friction clutch or belt slippage for each of several shafts so that each shaft will exert the proper amount amout of pull on the web. These disadvantages and the inability of the mechanism to wind numerous narrow width strips into straight sided rolls of uniform density outweighed the advantages when compared with more efficient methods of winding.

One Drum Surface Wind System

Another early system is referred to as the "one drum surface wind" meth-

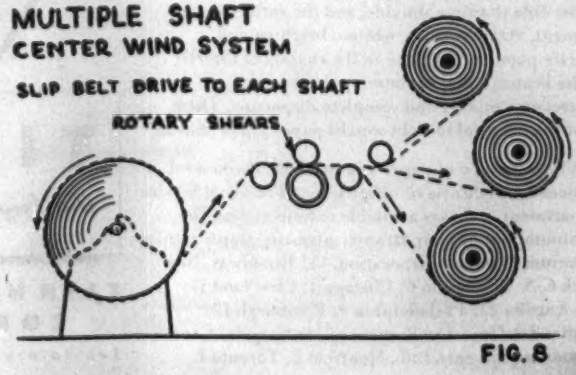

FIG. 8

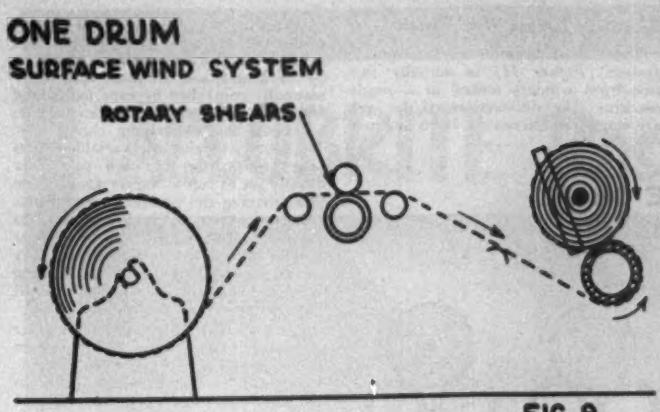

FIG. 9

od *(Figure 9)*. In this case, the rolls are wound on a single shaft in contact with the surface of the drum and revolved by friction contact with its surface. The center of the rewind roll moves upward from the drum vertically, or at an angle, as it builds up in diameter. The system is successfully used in conjunction with tissue machines when only jumbo or log rolls are required. In some operational respects, it represents an improvement over the "multiple shaft" system; but in this method of winding, as in all other methods where rolls are wound side by side on a single shaft, there is a tendency for the adjacent strip edges to overlap or interweave unless means are provided to prevent it. This condition makes separation difficult, sometimes impossible. An adjustable bow

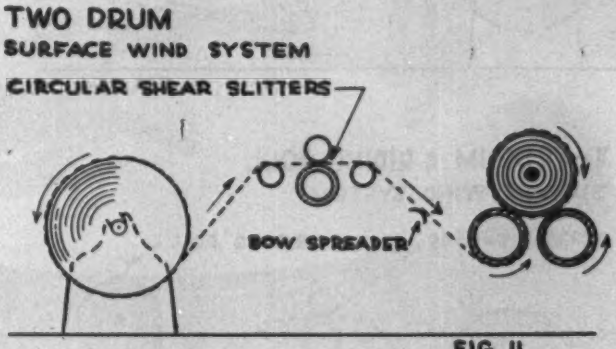

FIG. 11

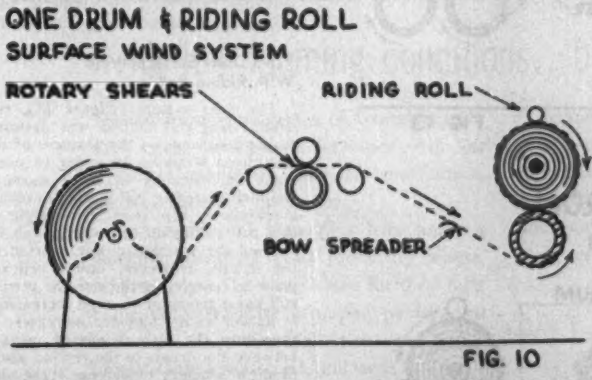

FIG. 10

spreader is usually employed to prevent overlapping of the edges prior to rewinding, but ordinarily it is difficult to secure sufficient traction at the start to assure a firmly wound basis on which to uniformly build up the roll as it increases in diameter.

One Drum and Riding Roll System

In some instances, the one drum surface winder is equipped with a pressure roll *(Figure 10)* to ride on top of the rewind rolls as they build in diameter. It is also arranged to move vertically or at an angle. The purpose of elevating it at an angle is to relieve its pressure on the rewind roll as it increases in weight and diameter. This friction driven riding roll does give increased traction at the start, but the traction is not sufficient for tight starts with firmly set cores except on light weight materials.

Two-Drum Surface Wind System

The following illustration *(Figure 11)*, the "two drum surface wind" system, represents a significant roll winding improvement over the systems referred to previously as is evidenced by the number still in use today. However, we find the same defects to a lesser degree, as are found in the one drum systems. In threading, the web, after being slit, passes upward between the rewind drums to the wining shaft which rests in the valley between the drums. One of the drums, generally the one nearest the operator, revolves slightly faster than the other. This speed differential may be established by gearing, vari-pitch drive, separate D.C. motors on each drum or by using drums of different diameters. The purpose of the speed differential is to assist the rewind shaft in obtaining traction at the start and to maintain traction on the web as the rewind roll increases in diameter. As its contribution to starting traction is minor, the sheet tension is still dependent on the weight of the rewind shaft. Consequently, slack starts are encountered as mill roll brake tension must be relieved to permit the drums to draw the web. As the roll builds up, brake tension can be gradually increased to obtain a fair degree of firmness; however, the roll is not uniformly firm as it grows progressively harder due to its ever increasing weight on the surface of the drums. Rolls produced by this method sometimes have loose cores, "star" and become out of round in subsequent shipping and handling. On narrow machines, loose starts may be prevented by means of downward pressure applied to the rewind shaft ends. On wide machines, this pressure is effective at the ends only, as the rewind shaft generally is not sufficiently rigid to transmit pressure evenly across the web. To counteract the tendency for large diameter rewind rolls to wind increasingly harder due to their ever increasing weight and the graduated traction of the overspeeded front drum, counterweighting mechanism has been furnished to relieve the weight of the roll on the drums as its

diameter increases. This mechanism proved helpful on narrow machines using rigid large diameter rewind shafts. However, when using average shafts, they tend to bow, causing uneven drum traction on the winding roll.

Four Drum Surface Wind System

The "Four Drum Surface Wind" system *(Figure 12)* is actually two two-drum winders united in a single machine. The slit sections of the web are staggered alternately from one pair of drum to the other; each section is wound on its own separate shaft. The rewind shafts are driven frictionally by the drums, and the drum speeds are manually controlled by cone pulley and belt variators, or by separate direct-connected motors driving each drum. The motors driving the variable drums (the front drum of each pair) are usually set to run at higher speeds than those driving the constant speed drums (the rear drum of each section). As the front drum motors take one more load as the rewind roll builds up, they are arranged so the actual speeds drop to approximately the same as that of the constant speed drums.

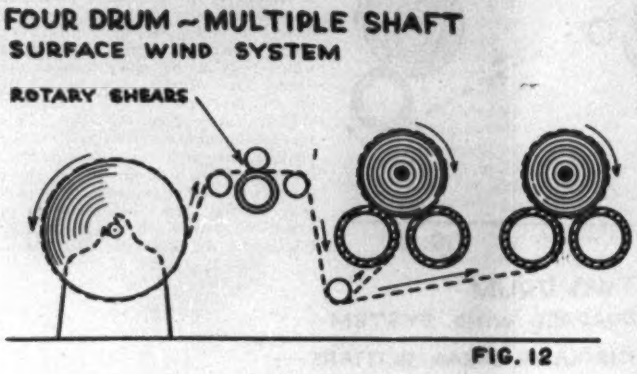

FIG. 12

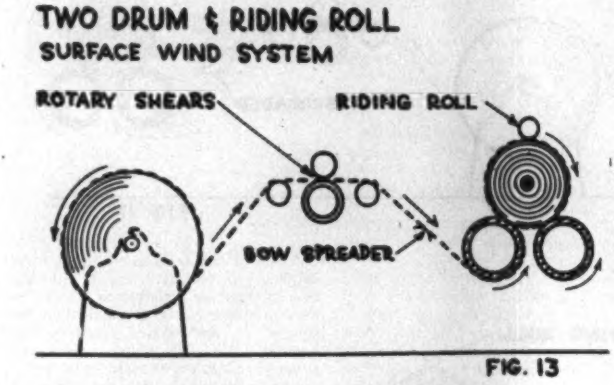

FIG. 13

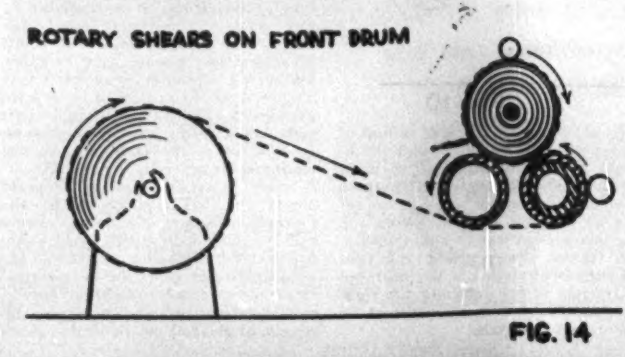

FIG. 14

The principal advantages are similar to those of the Center Wind system in that positive separation is assured; it is possible to wind rolls to different diameters; and when necessary, to tear out a defective section of the web, only that section is lost, instead of the full web width as is the case when all rolls are wound on a single shaft. Lastly, as the separate shafts are proportionately shorter, it is possible to weight them at the start for increased traction and counterweight them to relieve the weight as the rewind rolls increase in diameter.

Machines employing this system are at their best when winding wide strips. It is generally impractical to stagger wind narrow width strips due to the time expended in threading up, correcting false starts, splicing, controlling strip tension and in removing separate rewind rolls due to the multiciplicity of rewind shafts. Of course, by sacrificing the advantages of stagger wind, narrow, small diameter rolls can be handled on a common shaft using the front pair of drums and a bow spreader to spread the strips as they travel from slitters to rewind shafts.

"Two Drum Surface Wind" With Riding Roll

The next system *(Figure 13)*, two drum riding roll method, was designed to improve some of the features of the two drum winders. In order to overcome the difficulty of loose starts, a web-driven riding roll is used to obtain a reasonably firm start. The weight of this roll riding on top of the web increased the traction power exerted by the drums. However, unless relieved prior to completing the run, the rewind roll has a tendency to wind increasingly harder as its diameter increases. In threading the web is passed upward between the drums to the rewind shaft. Modern winders employing these slitting and winding principles are sometimes equipped with separate variable sped motors on the riding roll and drums to enable the operator to vary their driving effort at will.

Two Drum Riding Roll Surface Wind (Rotary Shears on Front Drum)

In the next system *(Figure 14)* the winding method also includes the use of a roll riding on top of the paper

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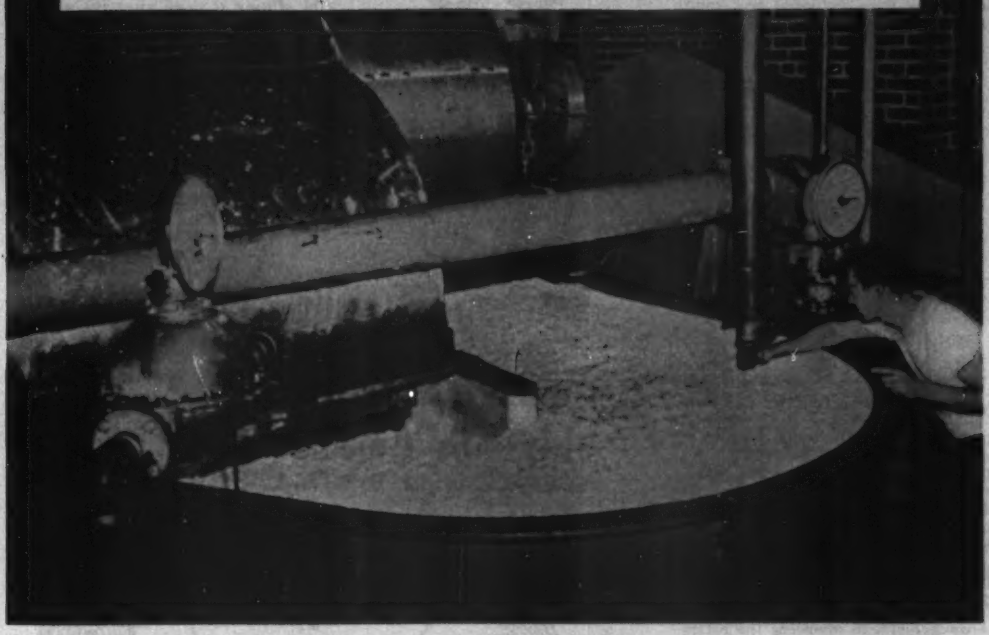

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and, in addition, provides for threading the web under both drums and up over the front drum for the purpose of increasing traction on the web at the start and to reduce the possibility of producing too hard a roll at the finish. The Meisel type of rotary shear, as discussed previously, is integral with the front winding drum. You will recall that this element is made up of a succession of slitter bands and spacing collars which are

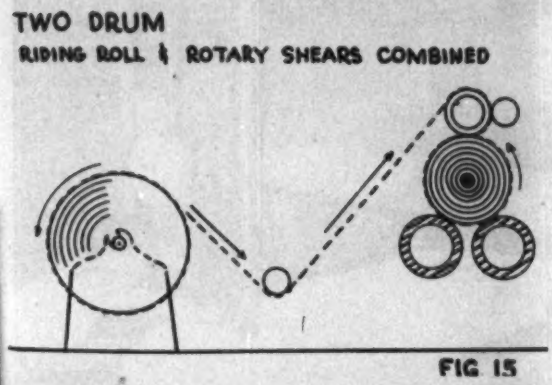


FIG. 15

gang spaced on the winding drum at predetermined intervals. While this method of slitting and winding makes it difficult to introduce a spreader after slitting, it is effective on level webs and on long production runs at given widths of strip.

Two Drum Riding Roll Surface Wind (Rotary Shears on Riding Roll)

Another system involving the rotary shear type slitting element is shown on the next illustration *(Figure 15)*. In this case, the riding roll serves a dual purpose in that it is made up of back shear blades and spacing collars. The overlapping toy cutters are of the Koegel type.

A further application of the two drum riding roll system *(Figure 16)* incorporates the conventional Koegel type of rotary shear which is mounted on the riding roll carriage. As the rewind roll increases in diameter, the slitting element rises with the riding roll. It is the intention of each system to reduce the possibility to interweave by shortening the draw between the slitting and winding points. These methods of slitting and winding have been utilized more particularly by foreign machine builders.

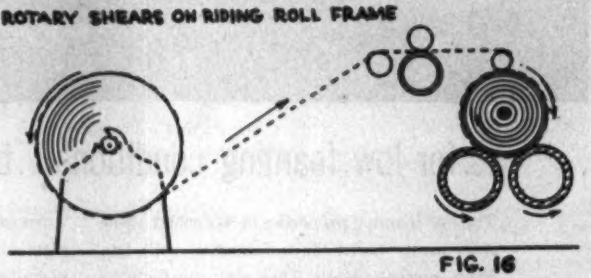


FIG. 16

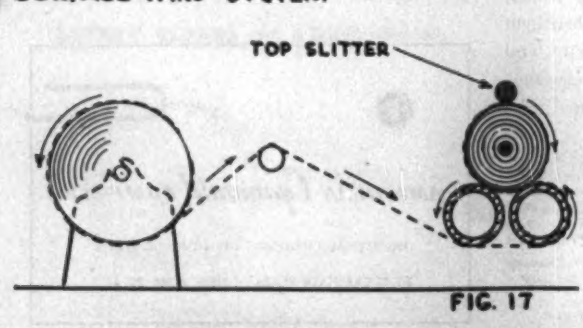


FIG. 17

Two Drum Surface Wind With Top Slitter

Further effort toward separation improvement is credited to the two drum surface wind using toy slitters *(Figure 17)* of uniform diameter. The driven slitter shaft is parallel to the drums, rests on the rewind roll and is forced upward as the rewind roll increases in diameter. As stated previously, positive separation is assured as the slitting is done after the web becomes part of the rewound roll. In some cases, it is not practical because of the quality of cut.

Two Drum Riding Roll Surface Wind System With Rotary Shears Below Front Drum

Another application of the two drum riding roll principle *(Figure 18)* locates the rotary shear element below the front drum. The purpose is to shorten the draw between the slitting and winding points and to provide room for spreading the strips before winding. There is a tendency for rotary shears, particularly on heavy boards, to push one edge down and away from its normal path of travel by as much as the shear blades overlap each other. It is, therefore, important that a spreader be introduced to restore strips to their normal paths before winding. In threading, the web is passed over supporting guide rolls or plates which straddle the shear element.

Two Drum Riding Roll Surface Wind System With Score Cut Slitting Element

The next system *(Figure 19)* involves two rewind drums operated at even speed and an over-speed riding roll. The slitting element, as stated previously, consists of a hardened and ground platen roll and friction driven, air-operated, semi-sharp slitter wheels. The rewind drums, platen roll and web travel at equal speeds, to evenly deliver the web to the rewind shaft. The web is threaded under the rewind drums and up over the face of the

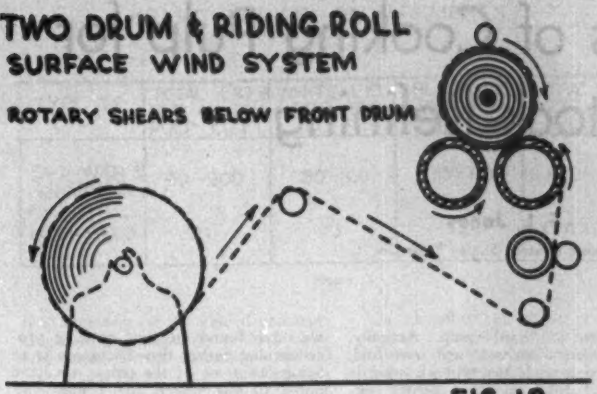


FIG. 18

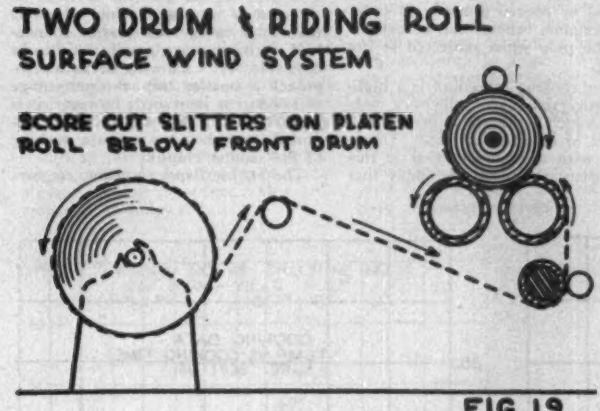


FIG. 19

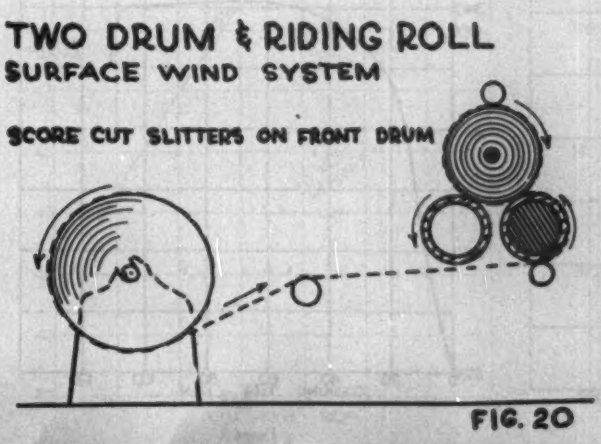


FIG. 20

front drum rather than between the drums to avoid winding an excessively hard roll as it builds up in diameter. When threaded between the drums, the rewind roll tends to become excessively hard due to its ever increasing weight combined with the down-pull on the web and over-speeded front drum which tend to force the rewind roll still more firmly into the rewind drum well. In the system shown the drums are driven at even speeds as their primary function is to support and rotate the rewind roll. The riding roll, by virtue of its weight and fixed torque differential, helps maintain uniform tension, quick starts, firmly-set cores and hard centers. Semi-automatic counterweights are arranged to relieve gradually the weight of the riding roll as the rewind roll increases in diameter and weight to obtain rewind rolls of reasonably uniform density. In order to spread the strips after slitting, the front drum is spirally grooved from the center toward each end. Longitudinal grooves are also provided to reduce the tendency of slack edges to wrinkle as they reach the nip of the front drum and rewind roll.

Two Drum Riding Roll System (With Score Cut Slitting Element on Front Drum)

In finishing room appliactions involving webs up to approximately 92" wide, the two drum riding roll system incorporates the score cut slitting element in the front drum *(Figure 20)*. It is so located to gain the advantages of a short draw between slitting and winding points, on relatively narrow webs which have less tendency to interweave or wrinkle in winding as a result of slack sections. The rear drum, platen roll and web travel at relatively even speeds and the riding roll at an adjustable overspeed to obtain tight starts and hard centers. It too is adjustably counter-weighted. When equipped with a shear element for slitting heavy boards, at consistently uniform strip widths, the slitting element is located below the front drum to allow strips to flatten and resume normal paths before winding.

In conclusion, we wish to reiterate that each of the systems shown has, to a greater or lesser degree, certain advantages and disadvantages. Not one of the systems discussed can be singled out as the ultimate in roll production equipment. While it is true that winder cost represents only a small fraction of the total cost of a paper mill and its resources, it is, nevertheless, a vital link in the long chain of processes required for paper making, as its perfromance and reliability are a measure of the performance and reliability of the entire mill. It is for these reasons that the search for improvement must be continuous.

Some Aspects of Cooking Pulp for Hot Stock Refining*

F. L. Jones
Technical Director, St. Joe Paper Co.

One of the primary objectives of every successful manufacturing enterprise is to constantly seek methods of reducing the unit cost of each item it produces. Increased pulp yield is an excellent method by which paper manufacturers can reduce the per ton cost of paper products. A quality product at low cost represents an ever popular combination. With this thought in mind, on March 13, 1950, the St. Joe Paper Company embarked on a program of refining hot brown stock.

The primary basis for Hot Stock Refining is increased pulp yield by the utilization of "hard" pulp. Actually, the benefits derived are two-fold, namely pulp yield per unit of wood is increased and in so doing greater conservation of existing pulp wood supply is effected.

In order to fully utilize the potential advantages of refining brown stock, it is most essential that the stock be prepared or cooked properly in order that maximum benefits can be derived from the pulp when subjected to hot refining.

Proper cooking procedure is a highly controversial subject, the very mention of which is certain to bring forth a deluge of different opinions. Therefore, I wish to point out that in this brief discussion we do not imply that we have found an ideal cooking procedure but rather this discussion is to bring out some of the points we have noted in our search for a pulp mill utopia.

The first phase in any cooking procedure, regardless of the type pulp desired, is proper chip preparation. The next logical question is what do we classify as a good chip. We feel that chips in the one-quarter to one-half inch screen classification to be desirable. It is known that as we approach a smaller chip, the percentage of sawdust is increased; however, it is possible that higher yields can be obtained through more uniform packing of the smaller chips.

The St. Joe Paper Company employs

* Presented at the Joint Meeting of the Southern and Southeastern Divisions of the American Pulp and Paper Mill Superintendents Assn., held at the George Washington Hotel, Jacksonville, Fla.

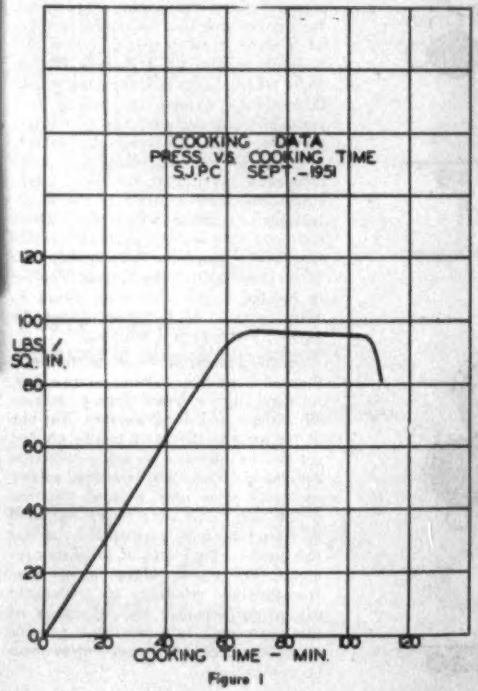


Figure 1

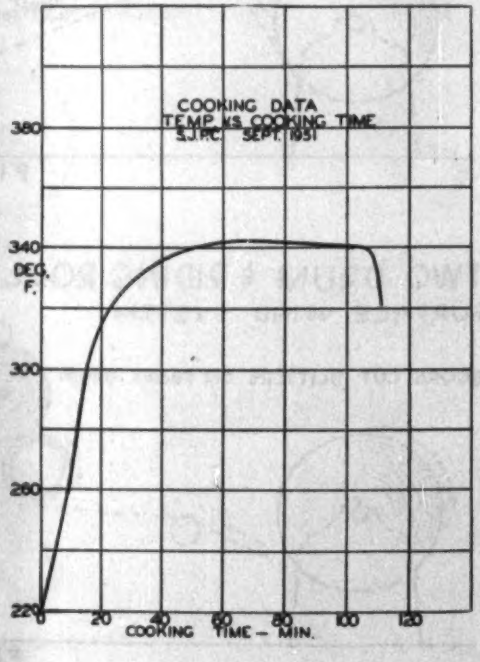


Figure 2

KRAFT LIQUOR REQUIREMENTS

TYPE OF PULP	TOTAL LIQ. PER AD TON PULP CU. FT.	WHITE LIQ. PER TON CU. FT.	BLACK LIQ. PER TON CU. FT.	ACTIVE ALKALI PER TON LBS.
BAG PAPER & LINERBRD.	90-200	80-100	10-110	520-650
HIGH-YIELD	91	73	18	472

Figure 3

four digesters of all welded construction, having a capacity of 4300 cubic feet each. Direct steaming with 125 p.s.i. steam is employed. Each of four 4-inch steam lines contains a 1¼ inch orifice plate. The orifice plates are used to assist in obtaining uniform steaming over a given period of time. All cooking operations are manually controlled at the present time.

In the initial stages changes were made in the orifice plates with other conditions being maintained as near constant as possible. Later changes were made in the total active alkali used and also in total cooking time. After several months of operation in which we observed and evaluated the results of numerous changes in cooking procedure we finally arrived at our present cooking procedure. This procedure is as follows:

In an effort to obtain a uniform pulp in a relatively short cooking period the digesters are brought to full pressure of 98 p.s.i. in one hour. The idea being to obtain even liquor distribution by violent agitation. The digester remains at full pressure for 45 minutes and is blown after a total steaming time of one hour and forty-five minutes. In *Figure 1* digester pressure is plotted against cooking time. You will note the rapidity at which a large digester is brought to full pressure. In *Figure 2* we have plotted digester temperature vs. cooking time. In this case you will notice a very rapid rise in temperature until a maximum temperature of 342°F. is reached.

The liquor requirements of a high yield cook are quite different from a cook producing normal yield pulps. *Figure 3* shows a comparison between the liquor requirements of a cook for normal yield pulp in the manufacture of linerboard as compared to a high yield cook producing pulp for a similar grade. You will note that the total active alkali amounts to 472 pounds per ton of pulp. The pulp produced from this type of cook has a chlorine number of 13 to 15 and a TAPPI permanganate number of 43 to 46. The spent black liquor as blown has a total solid content of 18 to 20 percent. Total steam required per digester is 38,500 pounds. A 4300 cu. ft. digester cooking in this manner yields approximately 16.5 to 17.0 tons pulp per cook, or 7.5 pounds pulp per cu. ft. of digester capacity. Upon refining and screening through 0.125" screen plates, a high yield pulp normally produces 4-6 percent rejects. The rejects are sent to a Jackson & Church type

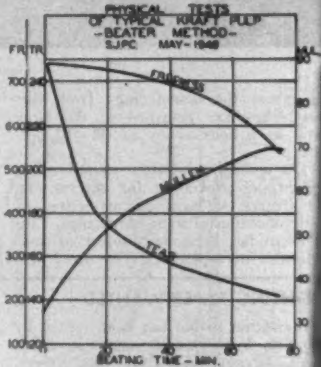


Figure 6

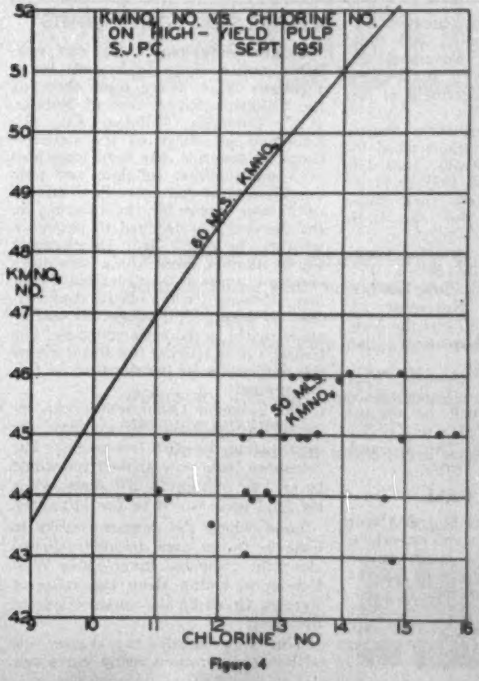


Figure 4

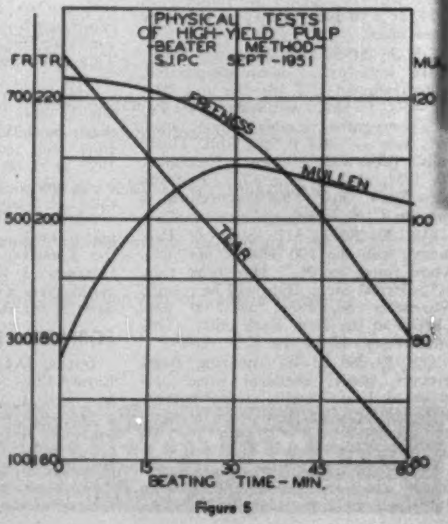


Figure 5

Figure 7

press for dewatering; from this point they are returned to the blow tank at a consistency of 38–40 percent.

The question is often raised as to the proper procedure for determining the degree of hardness or degree of delignification of such hard pulps. This problem has been the subject of considerable investigation. The usual permanganate number determinations are highly inflexible in such high lignin ranges. Several mills cooking high yield pulps are using a "chlorine number" which appears to give reproducible results. *Figure 4* shows comparisons between chlorine number and permanganate numbers using, in one case, 60 mls of permanganate, and in the other, 50 mls of permanganate. It will be noted that in the case where 50 mls of permanganate is used very poor correlation is obtained. However, when 60 mls of permanganate is used the mathematical curve shows good correlation.

In studying the strength characteristics of high yield pulps, *(Figure 5)* as compared to normal yield pulps, *(Figure 6)* it will be noted that the initial mullen development is much more rapid than in the case of normal yield pulps. This is no doubt due to pre-refining of the high yield pulp. High yield pulps also provide a higher tear value at the point of maximum mullen development as compared to normal yield pulps.

As previously pointed out, the subject of cooking is highly controversial, and quite often the relative values of pulps produced by different cooking procedures are subject to debate. There is one phase of the utilization of high yield pulps which we feel is of the utmost importance and is not subject to debate. We refer of course, to the increased yield and resulting wood conservation. In *Figure 7* is shown a typical wood storage yard. This pile contains approximately 3200 units of wood. During the year 1950 the St. Joe Paper Company reduced its wood consumption by slightly more than six times the amount of wood shown in *Figure 7*, as compared to the amount of pulp wood required to produce the same tonnage in any previous year prior to Hot Brown Stock Refining.

FIGHTING PAPER WANTED

Invitation to bid has been issued by the New York Quartermaster Procurement Agency, 111 East 16th Street, New York 3, N. Y., on QM-30-280-52-526, covering Liner, case, waterproof (various sizes), 45,000 each. Bids will be opened November 19, 1951, at 2:00 p.m. (EST) at the New York office.

QM-30-280-52-512, covering Paper, kraft, wrapping, non-waterproofed, non-parafinned, 272 yds. per roll, 24 x 36"—500/60 lb., 1,500 rolls; and, Paper, corrugated, flexible, single faced, 36" wide — 250 ft. per roll, 11,000 rolls. Bids will be opened November 20, 1951, at 1:00 p.m. (EST) at the New York office. This procurement is for the U. S. Navy.

QM-30-280-52-517, covering Pad, memo, sub-16, 100 sheets per pad, white ruled, 8x10½", blue faint rule, 3/16", 379,600 each. Bids will be opened November 30, 1951, at 2:00 p.m. (EST) at the New York office. This procurement is for the U. S. Army.

QM-30-280-52-487 covering Bags, grocers, paper, chemical wood, unbleached, heavyweight, satchel bottom, 440 pkg. Bids will be opened November 26, 1951, at 4:00 p.m. (EST) at the New York office.

QM-30-280-52-496, covering Paper, bread wrapped, waxed, self-sealing, 18" wide, 500 rolls; and Paper, wrapping kraft, paraffin impregnated, uncreped, 24" wide, type C, 300 rolls. Bids will be opened November 28, 1951, at 1:00 p.m. (EST) at the New York office. This procurement is for the U. S. Army.

QM-30-280-52-483, covering Paper, toilet tissue, crushed rolls, packed 96 rolls per box, 2,592,000 rolls. Bids will be opened November 20, 1951, at 11:00 a.m. (EST) at the New York office. This procurement is for the U. S. Navy.

QM-30-280-52-455, covering Chipboard, plain, sheet size 34" x 45", thickness 0.055"–0.067", 2,100 bundles. Bids will be opened November 13, 1951, at 11:00 a.m. (EST) at the New York office. This procurement is for the U. S. Navy.

QM-30-280-52-537, covering Bag, paper, kraft, grocers, self-opening, 3-lb., 4,460,000. Bids will be opened December 3, 1951, at 2:00 p.m. (EST) at the New York office. This procurement is for the U. S. Army.

FORM NEW EXPORT FIRM

Dover, Del.—Union Bag & Paper Export Corp., exporters and importers, has filed a charter of incorporation with the corporation department of the Secretary of State's office here. Capital of the firm was listed at 500 shares of stock, no par value. Prentice-Hall Corp. System, Inc., Dover, Del., is serving as the principal office.

CELGAR SEEKS FOREST RIGHTS

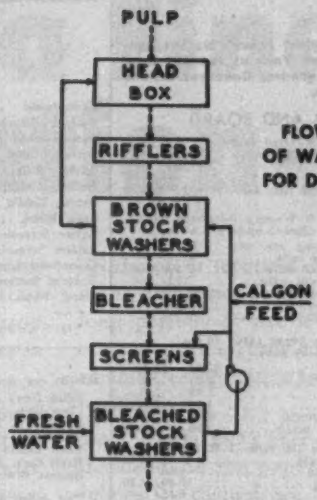
Celgar Development Co. has published notice of an application for a foreshore lease on the south shore of the Columbia River west of Robson, B. C. Columbia Cellulose Co., the Canadian subsidiary of the Celanese Corp. of America, has been interested in a multi-million cellulose and pulp development in this area. B. C. Affleck of Nelson, agent for the company in the district, has declined to announce whether the new Celgar Development Co. is another name for a subsidiary company formed by Columbia Cellulose. However, while official confirmation is lacking, it is generally understood that it is the same company. The Celgar Co. is seeking the forest rights for the purpose of development of forest products.

The Columbia Cellulose has been engaged in extensive survey over the area during the past few weeks. The foreshore lease now applied for would be on lots containing 270 acres, while the land lease would be for 110 acres.

Land which the company seeks to lease is in an area roughly situated along the Columbia River above West Robson to within about two miles of Syringa Creek on the opposite side of the river.

This area includes the Wesley site of lumber operations many years ago.

For washing deinked stock use



FLOW DIAGRAM OF WASHER SYSTEM FOR DEINKED STOCK

Calgon*

One of the major troubles in the washing of deinked stock is the deposition of hard carbonate scale on the wires of cylinder washers, on doctor boards and blades, in drain pipes and pumps.

You can stop scale deposition, and even remove old scale by threshold treatment of shower water with a few parts per million of Calgon—thus avoiding shutdowns for cleaning, and eliminating troublesome and potentially dangerous acid cleaning processes.

Write us for full information concerning this and other uses of Calgon in the paper industry.

*T. M. Reg. U. S. Pat. Off.

HAGAN HALL BUROMIN CALGON

calgon, inc.

A SUBSIDIARY OF HAGAN CORPORATION

HAGAN BUILDING PITTSBURGH 30, PA

PRICES

The prices below reflect market quotations in New York at the mill level on standard grades. Does not include spot offerings.

PAPER AND BOARD

Standard News, Delivered Ports

Rolls, contract, per ton	$114.00/116.00
Sheets	130.00/ —

Kraft— per cwt. 50# base wgt. — OPS Ceiling CPR 88

F.o.b. Southern & Western integrated mills. C.l. Freight allowed up to $10 a ton.

Standard Wrapping, ctr. rolls	$7.75/ —
Butchers, counter rolls	8.25/ —
Standard Bag, mill rolls	7.50/ —
Shipping Sack, mill rolls	7.75/ —
Gumming, mill rolls	8.00/ —
Asphalting, mill rolls	7.75/ —
Envelope, Sub. 20, mill rolls	9.25/ —

Tissues— per ream 24x36 (480) 10 lbs. 2500 lbs or more

Wh. No. 1 Frd.	$2.25 /$2.40
Wh. No. 1 MG	2.25 / 2.40
Wh. No. 1½	1.95 / 2.05
Wh. No. 2	1.75 / 2.00
Kraft Anti-Tar 20x30	2.12 / 2.25
White Anti-Tar 20x30	2.20 / —

Toilet— per case or 100 rolls—1 M sheets

Unbleached 4½x4½	$8.00/$8.25
Unbleached 4½x5	6.60/ —
Bleached 4½x4½	10.00/12.50
Bleached 4½x5	9.85/ —
Per Case of 50 roll—2000 sheets	
Unbleached 4½x4½	$8.00/$9.75
Bleached 4½x4½	6.95/ —
Per Case of 100 rolls—1000 sheets	
Facial, 4½x4½, 2-ply	$8.95/10.[illegible]5

Paper Towels—per case of 3750

Wh. Jr. M'tif'd 9½x9½	$6.40
Br. Sr. M'tif'd 9½x12	4.40
Br. Jr. M'tif'd 9½x9½	3.90
Br. Jr. Sgl. fold 9½x10½	3.95
Bldd. 7½x11, 24/25 rolls	$7.00/7.55

Manila, per cwt.

No. 1 Jute Tag, 100-lb., sheets*	$20.55/22.55
Reg. Jute M.F. 40-lb., sheets*	19.50/21.50
Wrapping Manila	8.75/10.50
Printing Manila	10.50/12.00

* Less usual allowance for rolls.

Gummed Tape—per bdl., 500 bdls. or more

90-lb. 375 ft. GSI	$7.20 / —
60-lb. 600 ft. GSI	7.20 / —
45-lb. 800 ft. GSI	8.28 / —
30-lb. 500 ft. GSO	6.21 / —

MARKET WOOD PULP

Fourth Quarter Contract Prices. Per Short Air-Dry Ton

	Varying freight allowances		On Dock Atlantic Ports		
	*U. S.	Canadian	*Swedish	*Finnish	*Norwegian
Groundwood	$92.50/ —	‡$95.00/100.00			
Sulfate, Bleached	145.90/ —	190.00/200.00	$230.00/ —	$230.00/ —	$230.00/ —
Semi-bleached Sulfate	140.00/ —				
Sulfate, Unbl.	132.50/ —	145.00/175.00	200.00/ —	200.00/ —	
Sulfite, Bldd.	140.00/ —	160.00/175.00	225.00/ —	225.00/ —	225.00/ —
Sulfite, Unbldd.	132.50/ —	150.00/160.00	200.00/ —	200.00/ —	
Sulfite, Unbl'd (Glassine)		164.00/ —			
Soda, Bldd.	140.00/ —	155.00/160.00			
Sulfite Screenings	72.50/ —				
Sulfate Screenings	67.50/ —				
Groundwood Screenings	60.00/ —				
Unbldd Sulfate Sideruns	132.50/ —				
Stand. News. Sideruns	92.50/ —	106.00 —			

* OPS Ceiling, CPR 49 ‡ F.o.b. Shipping Point.

Boards per ton—

Filled News	$107.50/ —
Plain Chip	105.00/107.50
Bldd. Mix. L-d. Chip	147.50/ —
White Pat. coated .020	170.00/ —
Kraft Liners 42 lb.	115.00/117.50
Kraft Corr. .009	122.50/126.00
Binders Boards	137.50/140.00

The following prices are representative distributors' resale prices:

Rag Content Bonds and Ledgers—
White, 20 lb.

Bonds	4 Ctns.
	per cwt.
100% Rag Ex. No. 1	$70.45/$75.90
100% Rag	62.65/ —
75% Rag	48.15/ —
50% Rag	38.90/ —
25% Rag	31.65/ 33.00

Ledgers	4 Ctns.
	per cwt.
100% Rag Ex. No. 1	$72.65/$72.80
100% Rag	63.90/ —
75% Rag	49.40/ —
50% Rag	40.20/ —
25% Rag	33.60/ 34.30

Sulphite Bonds and Ledgers
White, 20 lb.

Bonds	4 Ctns.
	per cwt.
Watermarked	$19.00/$20.50
Plain	18.40/ 19.50

Ledgers	4 Ctns.
	per cwt.
Watermarked	$20.30/$21.80
Plain	19.35/ 20.80

White Book

Conversion Coated	Case
	per cwt.
No. 1	$23.95/$24.65
No. 2	22.15/ 23.40
No. 3	21.90/ 22.40
Machine Coated	
No. 1	$18.40/$18.90
No. 2	16.65/ —
Uncoated	
No. 1 Antique (Watermarked)	$18.65/$19.65
Offset	18.65/ 19.90
A Grade E. F.	18.10/ 19.90
A Grade S. C.	18.65/ 19.40
B Grade E. F.	18.40/ —
B Grade S. C.	17.40/ 19.15

‡ Indicates a price change.

WASTE PAPER MARKET

Prices to mills, per ton, f.o.b. cars shipping point (includes brokers' fee.) These quotations are a partial indication of the price range in each market on the date specified, as gathered from major dealers. Because of market instability November price ranges were not clear at press time. ALL PRICES ARE STRICTLY NOMINAL.

	New York	Philadelphia	Boston	Chicago
	Nov. 5	Oct. 5	Nov. 1*	Nov. 5
No. 1 Mixed Paper	nominal	$10.00/ 12.00	— / 13.00	$10.00/ —
No. 1 News	15.00/ 17.00	12.00/ 14.00	— / 15.00	15.00/ —
Over-issue News	20.00/ 26.00	20.00/ —	20.00/ 22.00	18.00/ —
Corrugated Containers	18.00/ 20.00	18.00/ 20.00	19.00/ 24.00	15.00/ —
Double Kraft Ld. Corr. Cuts	48.00/ 60.00	50.00/ —	*48.00/ 60.00	$50.00/ 60.00
100% Kraft Corr. Cuts	65.00/ 80.00	80.00/ —	90.00/ —	85.00/ —
Used Sugar & Flour Bags	60.00/ 65.00	50.00/ —	45.00/ 70.00	40.00/ —
Super Resorted Br. Kraft	65.00/ 70.00	65.00/ 70.00	60.00/ 70.00	40.00/ —
New Br. Kraft Env. Cuts	120.00/130.00	125.00/ —	*120.00/130.00	100.00/ —
New Br. Kraft Cuts	95.00/115.00	115.00/ —	110.00/140.00	90.00/ —
No. 1 Gdwd Shvs.	50.00/ 55.00	16.00/ 50.00	65.00/ 75.00	30.00/ —
White Newsblanks	75.00/ 80.00	50.00/ 70.00	70.00/ 80.00	50.00/ —
No. 1 Flyleaf Shvs.	55.00/ 60.00	50.00/ 65.00	*50.00/ 85.00	60.00/ —
No. 1 Soft Wht. Shvs.	125.00/140.00	135.00/145.00	140.00/165.00	125.00/ —
Super Soft Wht. Shvs.	160.00/175.00	150.00/165.00	155.00/180.00	135.00/ —
Hd. Wht. Shvs.	165.00/175.00	170.00/180.00	170.00/180.00	140.00/ —
Hd. Wht. Env. Cuts	175.00/190.00	190.00/210.00	190.00/200.00	150.00/ —
New Manila Env. Cuts	100.00/120.00	130.00/140.00	130.00/155.00	45.00/ —
Col. Tab Cards	90.00/ 95.00	75.00/100.00	85.00/110.00	85.00/ —
Manila Tab Cards	130.00/135.00	125.00/140.00	140.00/160.00	100.00/ —
No. 1 Mixed Ledger	80.00/ 90.00	75.00/ 85.00	67.00/ 90.00	90.00/ —
White Ledger	105.00/110.00	105.00/115.00	95.00/110.00	105.00/ —
No. 1 Book & Mag.†	33.00/ 37.00	23.00/ 30.00	30.00/ 50.00	17.00/ —
No. 1 Rep'd. Hvy. Books‡	43.00/ 50.00	30.00/ 40.00	45.00/ 60.00	40.00/ —

† Includes Time & Life; no course groundwood. ‡ Not to exceed 10% groundwood. * Indicates Nov. 1 change. ‖ Dedd.

RAG MARKET

New Domestic Cotton Cuttings
OPS Ceiling Price, CPR 28
Delivered Mill Basis

Add 7½% Dealer Commission

No. 1 White Shirts	$21.00
No. 1 Unbldd. Muslins	21.00
Bldd. & Unbldd. Underwears	21.00
Bldd. Canton Flannels	21.00
No. 1 Light Silesias	16.00
No. 1 Light Prints	11.50
No. 1 Blue Overalls	14.50
Suntan Khakis	11.50

Add 10% Dealer Commission

Fancy Shirts	$10.00
Indigo Blues	10.00
Mixed Khakis	8.00
Corduroys	8.00
Cottonades	8.00
No. 1 Washables	6.50

Old Domestic Cotton Rags
(Prices to Dealers, F.o.b. Ship. Pt.)

	Per 100 lbs.
Mixed White	$6.00/$6.50
Cotton Pants & Overalls	6.50/ 6.75
Thirds and Blues, Repacked	5.50/ 6.00
No. 1 Roofing Rags	1.65/ 1.75
No. 2 Roofing Rags	1.20/ 1.30
No. 3 & 4 Roofing Rags	1.10/ 1.20

Bagging
(Prices to Dealers, f.o.b. N. Y.)
PRICES NOMINAL

	Per 100 lbs.
Foreign Gunny	$5.00/$5.50
Domestic Gunny, No. 1	5.00/ 5.50
Heavy Wool Tares	5.50/ 6.00
Foreign Manila Rope	9.00/ 9.25
Domestic Manila Rope	9.00/ 9.25
Jute Strings	6.00/ 6.50
No. 1 Sisal Strings	8.50/ 8.75
Paper Mill Tares	5.25/ 5.50
Foreign Scrap Burlap	4.25/ 4.50
Domestic Scrap Burlap	4.75/ 5.00
Austr. Wool Pouches	7.00/ 7.50
New Burlap Cuttings	7.00/ 7.50

For Extra Fine Lubrication-

-use Sinclair Rubilene

Over many years engineers and plant operators have recognized Sinclair RUBILENE® as capable of rendering extra fine lubrication performance in the powerhouse and in the mill.

Sinclair RUBILENE has always been a top-quality oil, as it has been constantly improved through the years, incorporating the latest technological developments in refining and processing. It resists oxidation under continuous high temperatures, and recirculation. It separates rapidly from water, and is non-foaming. Through long periods of use it retains its original qualities, providing uniform, trouble-free lubrication and low maintenance costs.

Yes . . . RUBILENE's finer quality pays dividends in the paper plant. For lubrication counsel, see your nearest Sinclair Representative or write direct to Sinclair Refining Company, 600 Fifth Avenue, New York 20, N. Y.

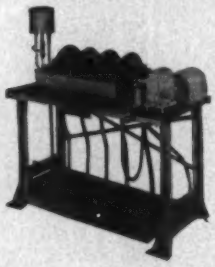
MATERIALS

Aluminum sulfate:		
cons. bags, wks.....cwt.	1.65	
iron-free, c.l.	3.25	
Alcohol, ethyl:		
tax free, dms. c.l.....gal.	1.01	/ 1.05½
dcld. East Miss.		
Alcohol, methyl:		
Synthetic, Zone 1, dms.		
c.l. fit. alld.....gal.	.44	
Casein, acid proc.:		
dom. sh. pt. c.l.....lb.	.36	/ .41½
imp. ex. dock .....lb.	.27¼/	.36
Caustic soda:		
c.l. wks. solid, 76% cwt.....	3.35	
flak. & grd. 100-lb. drums...	3.75	
liquid 50% tanks....	2.55	
liquid 70% tanks....	2.65	
China clay:		
dom. air-float. c.l. wks.		
ton	10.00	
water-washed, lump, filler....	11.00	
coating	17.60	/30.50
imported, ex whse...short ton	13.20	/28.35
Chlorine:		
single-unit tanks, works..cwt.	2.70	
multi-unit .....cwt.	3.20	/ 4.40
Formaldehyde:		
USP, inh. dms, c.l. wks....lb.	.0625/	.0675
l.c.l., E. wks.....	.0675/	.0725
Fuel oil:		
Bunker C, No. 6 Cal. hvy.		
tanks, refinery .....bbl.	1.95	/ 2.15
light .....bbl.	2.00	/ 2.25
Hydrogen peroxide:		
USP, 35% chys. E. of Miss. lb.	.23½/	.26½
Lime:		
hydrated, bags, wks. .....tons	13.50	
Rosin:		
B gum, drms, c.l. Savan..cwt.	7.00	/ 9.00*
G, H, I, K .....cwt.	9.10	/ 9.49*
FF, wood, de.....cwt.	6.80	/ 7.30*

* OPS Ceiling, CPR 32.

Rosin size:		
70%, gum & pale grds, tank cars, south, sh. pt. ....cwt.	7.50	/ 7.60
Salt cake:		
dom. bulk, c.l. wks.....ton	17.00	
wks. frt. all.....ton	20.00	/22.00
Soda ash:		
light, 58%, bags, wks.....	1.30	
bulk .....cwt.	1.30	
Sodium silicate 40°:		
turbid. c.l. wks. .....cwt.	1.30	/
l.c.l. wks.	1.60	/ 1.85
Sodium peroxide:		
dms. c.l. E. of Miss.....lb.	.21	
l.c.l. do. .....lb.	.21½/	.22
Soybean, protein:		
chem. isol, wks. c.l.....lb.	.34	/ .38
Can. and Chic.		
Sulfuric acid:		
60° Be. chys. c.l. wks....cwt.	1.75	/ —
l.c.l. wks. .....cwt.	2.05	/ 2.85
Sulfur:		
crude, c.l. mines, contract, long ton	21.00	/22.00
f.o.b vessels Gulf	22.50	/23.50
Sulfur dioxide:		
liquid, cons. cyl. wks.....lb.	.09	
multi-unit cars .....lb.	.0535	
Starches:		
pearl corn, bags, c.l. wks...cwt.	6.09	/ —
white dextrines, c.l. wks...cwt.	7.48	/ —
potato, Idaho, c.l. wks....cwt.	5.75	/ —
potato, Maine, c.l. wks....cwt.	nominal	
tapioca, conv. dextrines...cwt.	6.50	/ 7.50
Talc:		
domestic, 50-lb. sacks, c.l. wks. .....ton	25.00	/30.00
Titanium dioxide:		
anastase, c|l| dcld., bags....lb.	.21	/ .21½
l.c.l. dcld. .....lb.	.22	/ .22½
rutile, c.l. dcld. .....lb.	.23	/ .23½
l.c.l. dcld. .....lb.	.24	/ .24½

CLARK MODEL 46
THE STRAIGHT LINE PULP CLASSIFIER



Control beating and refining processes on groundwood or chemical pulps. Excellent for coarse and fine pulps. Screens from 8 to 250 mesh available. Eight complete tests in one hour. Results reproducible within 1%. No recirculation or eddy currents. Open construction offers visual proof of progress of classification. Easily cleaned. Minimum Maintenance.

THWING-ALBERT INSTRUMENT COMPANY
5366 Pulaski Avenue
Philadelphia 44, USA

11-0

NEW LITERATURE

Allis-Chalmers Mfg. Co., 994 S. 70th St., Milwaukee 1, Wis. Bulletin 51B-7225, "Totally Enclosed Fan-Cooled & Non-Ventilated Motors." Also, Bulletin 52B7529, "Allis-Chalmers Package Pumps." Both, technical plus sales copy.

American-LaFrance-Foamite Corp., Elmira, N. Y. Booklet, "Correct Fire Protection." 32 pp. Illustrates and describes the various sizes of units available for use with the different kinds of fire extinguishing agents. Single copies available gratis.

Atlas Powder Co., Wilmington 99, Del. Booklet, "Atlas Sorbitol and Related Polysols." Includes charts showing properties of Sorbitol and uses in moisture conditioning and chemical manufacturing.

Wm. L. Barrell Co., 52 Chauncy St., Boston, Mass. Book, "Barrell's Paper Annual, Vol. V." The 1951-52 complimentary edition contains a revised directory of the officials of the 33 industry associations; a revised edition of "Paper Trade Terms" by William Bond Wheelwright, also his article, "Keeping Pace With Papermaking," which traces methods of drying paper to the present continuous system. Available to paper manufacturers only.

Clark Equipment Co., Battle Creek, Mich. "Clark Materials Handling Equipment." A new condensed catalog showing specifications, by model and capacity, for gas and electric fork lift, also attachments and devices.

Dominion Engineering Co., Ltd. Bulletin, Vol. XVIII, No. 10, "Evaluating Engineers . . . to Recognize Talent and Reward Achievement." A discussion of methods for job evaluation and merit rating in creative engineering.

Engineering Products Co., Inc., 122 South Michigan Ave., Chicago 3, Ill. Brochure, "EPCO Traction System." Describes easy, quick methods to move all heavy goods such as rools, reels, steel coils, bales, etc.

Equivalent Valves Co., P. O. Box 816, Station H, Los Angeles 44, Calif. Manual, "Equivalent Valves." 170 pp. Compares valves of 18 leading manufacturers by material, type, pressure rating, and structural variations. Over 50,000 postings of figures, names, and descriptions.

The Esterline-Angus Co., Inc., Indianapolis, Ind. Bulletin, "Solving Industrial Crimes." Shows types of graphic instruments used by various industries to recognize waste and solve and prevent crime.

Foster Wheeler Corp., 165 Broadway, New York 6, N.Y. Brochure, "Heat Engineering." Features Monsanto's Smokeless Boiler Operation Result of Planning; Accumulators Handle Fluctuating Steam Loads in Process Plants; Package Type Steam Generator.

Henry A. Gardner Laboratory, Inc., 4723 Elm St., Bethesda 14, Md. Broadside, "Here's How You Can Save on Thermometer Costs.". Sales copy on Weston Thermometers.

Johnstone Engineering & Machine Co., Parkesburg, Pa. Bulletin No. 951, "For Perfect Roll Separation Narrow and Wide." Features Johnstone Twelve and Fourteen Slitters and Roll Winders. Sales copy with technical details.

Link-Belt Co., Chicago 8, Ill. Features "Pulpwood, Chips, Coal, Lime, and Rolls of Paper as Handled by Link-Belt Elevating and Conveying Equipment at Modern Coosa River Newsprint Plant."

Lovejoy Flexible Coupling Co., 5001 W. Lake St., Chicago 44, Ill. Catalog, "L-R Flexible Couplings; Variable Speed Transmissions; Universal Joints." Sales and technical copy with cuts, layouts, charts, and engineering data.

National Planning Assn., 800 21st St., N. W., Washington 6, D. C. Booklet, "The Five Percent," by Beardsley Runyl and Theodore Geiger. A revised edition including a new appendix by Harry J. Rudick. A report about the deduction from net earnings before taxes which corporations are permitted to make for expenditures on educational, scientific and welfare purposes. Price 50c.

The Rapids-Standard Co., Inc., Grand Rapids 2, Mich. Catalog, "Rapistan Material Flow Conveyors." 28 pp. By photos, sketches and charts shows

what each item of Rapistan equipment is, how it works, and what type of material it will handle.

Milton Roy Co., 1300 E. Mermaid Lane, Philadelphia 18, Pa. Bulletin No. 251, "Motor-Driven Controlled Volume Pumps." Technical plus sales copy. Includes pressure selection tables.

The Swartwout Co., 18511 Euclid Ave., Cleveland 12, Ohio. Bulletin 346, "Swartwout Whirlout; Straight-Through Powered Roof Ventilator." Technical copy with dimensional and capacity charts.

Tall Oil Assn., 122 E. 42nd St., New York 17, N. Y. Bulletin No. 9, "Tall Oil in Industry." Devoted to use of tall oil as an emulsifier for industrial emulsions.

U. S. Dept. of Agriculture Forest Service, Southeastern Forest Experiment Station, Box 252, Asheville, N. C. Bulletin, "Annoted Bibliography of the Lake City (Fla.) Branch of the Southeastern Forest Experiment Station for the Year 1951." Bulletin, "The Use of Chemicals to Control Inferior Trees in the Management of Loblolly Pine," by L. E. Chaiken. Bulletin, "Forest Fire Damage Procedures and Tables for the Northeast," by A. W. Lindenmith, Jr., J. J. Keetch, and Ralph M. Nelson. Bulletin, "A Technique for Hand Planting of Forest Trees in the Southern Appalachians," by W. G. Wahlenberg, Silviculturist.

U. S. Dept. of Commerce, Washington 25, D. C. "Regional Trends in the United States Economy." A regional market guide intended to aid marketing specialists with economic data on various regions of the country, income data, and other trends. Said to be the most comprehensive to be published in recent years.

Worthington Pump and Machinery Corp., Harrison, N. J. Bulletin W 317-B12, "Freeflo Pumps for Sump, Sewage and Drainage Service." Includes a cross-section drawing, graph of coverage for 60-cycle motor speeds, dimensions in inches and data on flanges. A request on company letterhead to Worthington will bring you a copy of this bulletin.

HOW'S YOUR FIVE PERCENT?

We have just received a copy of "Five Percent." Strangely enough it does not deal with the Washington "helpers" but with contributions to bona fide educational, scientific and welfare activities, deductable from federal income taxes. With all private institutions being crowded to the wall, industry should read this booklet and act accordingly. Available from the National Planning Assn.

FREIGHT RATE INCREASE

OTTAWA — Canadian pulp and paper industry will not find freight rate increases delayed until the Canadian Parliament has enacted legislation providing for an equalization of the rates across Canada.

Transport Minister Lionel Chevrier told Parliament that the Canadian Government cannot accept a proposal which has been made by the opposition in Parliament that freight rate increases be refused until Parliament has passed finally on the equalization issue. He indicated that, if the railways can support a case for an increase, the boost cannot be denied.

Meanwhile, Parliament passed second reading to a bill authorizing the Board of Transport Commissioners to establish uniform freight rates as far as possible for all Canada, with the bill being referred to a 31-man all-party committee of the House to study it in detail and to hear representations from all interested parties.

The legislation, Mr. Chevrier said, will not affect the principles of the Maritime Freight Rates Act which allows a 20 percent discount on freight moving to and from the Maritime Provinces, this protection being insisted upon by the Government.

WILL BUILD NEW OFFICES

The present head offices of Alaska Pine and Cellulose Co., partnership of Abitibi Power and Paper Co. and the Koerner interests, will be moved from the Marine Building at some future date. Company officials announced recently that the exact type of construction had not been decided upon, but that the location would be at Pender and Thurlow in Vancouver, B. C.

Type RCV Vacuum Pump in north-central paper mill. Capacity 2826 cfm at 15" Hg.

PUT THESE 5 MUSTS ON YOUR SHOPPING LIST

You'll get top vacuum pump performance when you install R-C equipment with these 5 essential features:

1. **LOW POWER CONSUMPTION**—because units are recommended, either single or compound, to operate at the most efficient point.
2. **NEGLIGIBLE FRICTION LOSSES**—no contact between impellers or impellers and casings.
3. **HIGHER SPEEDS**—permitting direct connection to standard motors, saving first cost, space and weight.
4. **FLEXIBILITY**—to meet varying demands; suction automatically overcomes resistance in system.
5. **DEPENDABILITY**—long-time, attention-free operation, due to simplified design and construction.

Tell us your requirements and we'll recommend an R-C Vacuum Pump with the proved ability to meet your needs. Ask us for Bulletin 50-B-13.

Roots-Connersville Blower Corporation
510 River Avenue, Connersville, Indiana

ROOTS-CONNERSVILLE
ONE OF THE DRESSER INDUSTRIES

New Equipment

Intercommunications Systems

A new intercommunications system, combining many features of the Talk-A-Phone master - selective and deluxe models, and adaptable to a wide range of time and labor saving uses in industrial installations, offices, stores, factories and institutions, has been introduced. Known as CL Series and adaptable to a wide variety of installations, it is designed for systems requiring operation of more than one master station along with sub-stations. Incoming calls may be answered by master stations or substations without manual operation, from a considerable distance from the unit. CL-5 is a combination system for five station use, and the CL-10 is a combination system for ten stations. Master stations are equipped with talk-listen switches, stand-by, station selectors and volume control, while staff stations require no manual operation.

Write to Talk-A-Phone Co., 1512 S. Pulaski Rd., Chicago, Ill. for full details.

Insulation Test Unit

A new high voltage D.C. insulation test unit with an unusually wide range is now available. The instrument is designed to prevent insulation breakdowns on all types of high voltage equipment by detecting insulation weaknesses before breakdowns can occur. The unit tests at over or under the full operating voltage of the equipment under test and will not impair the value of the insulation as a result of the test, it is said. Called the TAKK High Voltage D.C. Insulation Tester, the unit is manufactured for ranges of 0-15 K.V., 30 K.V., 45 K.V. and 75 K.V.

Supplied by John Hewson Co., 706 Water St., New York 5, N. Y.

Heavy-Duty Master Switch

A redesigned master switch featuring a new cast-aluminum cover and up to five adjustable stops is announced. For heavy-duty installations, the dust-proof switch will find application on large materials handling equipment such as steel mill type cranes.

The new aluminum cover offers good protection for the switch interior from dust, dirt, and accidental blows, according to G-E engineers. Weighing only one-third as much as the previously used cast-iron cover, it is easy to remove for inspection and normal servicing of the switch interior. Adjustable stops on the switch provide for any combination of from one to five points of movement of the operating handle in either clockwise or counterclockwise direction. An open end wrench is the only tool required to make this adjustment.

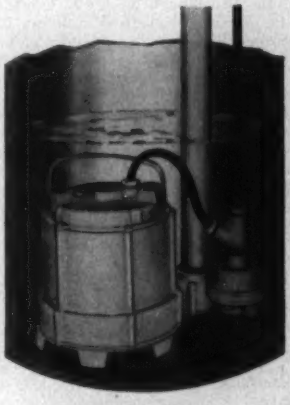
Standard equipment includes a ball and rod handle, but four other types of operator are also available: ball and rod handle with off-position latch operated from a thumb lever on the handle; ball and rod handle with auxiliary electrical switch operated from a thumb lever on the handle; ball and rod handle with spring return mechanism built into the handle; and an under-lever mechanism.

The new switch is fully interchangeable in size and mounting with former G-E types, and all wearing parts, such as contacts, spring, cams, etc., are the same, simplifying parts replacement. Measuring 13-in. wide and 10-in. deep, it is approximately 14-in. high with the handle in a vertical position.

Manufactured by General Electric Co., Schenectady 5, N. Y.

Utility Pump

A completely submersible utility pump is now available with many applications of interest to maintenance, operating and engineering executives of industrial plants. Principal uses of this pump include the many types of sumps found in factory layouts such as in boiler room pits, underground utility installations, elevator pits and other low areas. In addition to sump usage, this portable, compact pump has many utility purposes such as draining flooded areas and buildings, pumping out new excavations for buildings and ditches, and draining tanks and vats.



The submersible feature is made possible by the Automatic Liquid Level Control Switch which eliminates the need for a float. This switch which has no moving parts exposed to water, turns the pump on automatically as a result of air pressure created by water rising in the switch skirt moving a diaphragm which, it is said, in turn trips the switch.

Water, silt or other debris cannot foul the switch, it is said. The low turn-off point is obtained since pumping action sustains switch operation

CHAS. T. MAIN, INC.
CONSULTING ENGINEERS
Process Studies, Design, Specifications and Engineering Supervision
PULP AND PAPER MILLS
Steam, Hydraulic and Electrical Engineering Reports, Consultation and Valuations
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DE LAVAL white water pumps

DE LAVAL Steam Turbine Company
TRENTON 2, NEW JERSEY

CHEMIPULP PROCESS, INC.
CHEMICAL PULP MILL ENGINEERS
500 WOOLWORTH BUILDING
WATERTOWN, NEW YORK
Associated with CHEMIPULP PROCESS LTD., Montreal, Quebec

APPLETON Felts
FOR DEPENDABILITY
APPLETON WOOLEN MILLS
APPLETON WISCONSIN

and thereby makes it possible to pump a sump dry with 5/8 inches of the bottom.

Unit is both manual and automatic, provided with a thru-cord switch which permits manual-starting at any depth of water. After starting manually, cord switch can be set to automatic position and pump shuts off automatically. Pump is all bronze, weighs 50 lbs., has a capacity of 3300 g.p.h.

Manufactured by Kenco, Inc., 1125 North Ridge Rd., Lorain, Ohio.

Adjustable Light Fixture

A new adjustable incandescent light fixture with universal stand or clamp mounting has been marketed.

Designed to illuminate a surface for layout, inspection, and for operations such as profile grinding and milling, engraving, sharpening, and small parts assembly, the fixture focuses 5/8 to 3 inches spot on a surface. Assembly includes an adjustable two-lens condenser and reflector with an adjustable tube that is moved axially to vary the light spot. Cast-iron base is equipped with rubber feet. A universal clamp is available in place of base, if specified.

Write to Lindly & Co., 78-82 Herricks Rd., Mineola, N. Y.

Paper Tester Gage

The new Ashton gage is designed for use on Mullen and Cady type paper testers for bursting strength measurements. Known as 96a, the gage is distinguished by the push-button mechanism which smoothly and positively returns the pointer to the zero mark.

Available in a 3-inch dial size to 120 pounds and 4½-inch dial sizes to 1000 pounds for use in paper mills in production testing, for spot testing from hand sheets, and for laboratory use. For pressures up to 5000 pounds, a six-inch dial steel tube gage is available on special order. Single-pointer and push-button return mechanisms are described as simple, reliable and

NASH ENGINEERING COMPANY
421 WILSON AVE., SO. NORWALK, CONN

well-suited for rapid consecutive burst on paper, chipboard or corrugated. Test gage accuracy of ½ of 1% is maintained on all paper tester gages, the manufacturer states.

Made by Crosby Ashton Gate Co., Wrentham, Mass.

The Controlled Flow

VICTORY BEATER

is manufactured by

THE NOBLE & WOOD MACHINE CO.

Paper Mill Machinery

Hoosick Falls • New York • U. S. A.

A. M. MEINCKE & SON, INC.

Materials for Paper Making

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CHICAGO, ILL.

FIBER RESEARCH AND SERVICE

Semi-Chem. and Chemical Pulp Processes

Pilot Plant Facilities

THE KINSLEY CHEMICAL COMPANY

Cleveland 11, Ohio

MISCO

STAINLESS STEEL CASTINGS

FOR ALL EQUIPMENT EXPOSED TO CORROSION BY SULPHITE ACIDS OR OTHER CORROSIVE AGENTS

MICHIGAN STEEL CASTING CO.

DETROIT 7, MICHIGAN

Sandy Hill

IRON & BRASS WORKS

PAPER MACHINERY SPECIALISTS

HUDSON FALLS, N. Y.

Builders of

SANDY HILL, BERTRAMS AND KAMYR EQUIPMENT

OBITUARIES

James W. Krantz 33, field service representative of The Black-Clawson Co., Hamilton, Ohio, died October 15, at Claremore, Okla., following an appendectomy performed a week previous to his passing.

At the time of his death Mr. Krantz was directing the erection of the paper machine being installed at the new Pryor, Okla., plant of the National Gypsum Co.

Mr. Krantz joined Black-Clawson in 1946 as a fitter in the assembly department, he later became a field service erector and in 1950 transferred to the engineering department as a field service representative. He was especially qualified as a consultant on mechanical operation and service on paper machines and auxiliary equipment.

He is survived by his widow and a one-year-old daughter.

Wilson J. Field, 51, Western paper box industry leader and sportsman, died October 11 at his home in Orinda, Calif. Death was caused by a previously unsuspected heart condition.

SETTLE DOESKIN STRIKE

WILMINGTON, Del. — The strike of 300 workers at the Rockland, Del., plant of Doeskin, Inc., was settled over the October 27 week-end, with the employes getting a cost of living wage increase of four cents an hour.

Walter McMahon, manager, said the wage increase, which amounts to a boost of 2.8 percent, applies to the company's 700 workers in the three plants. The other two are at Wheelwright and Northampton, Mass.

The Rockland workers were on strike more than five weeks, and those at Northampton were out about four weeks. Workers in the third plant did not strike.

Mr. McMahon said the AFL Paper Makers Union, which represents the workers of all three plants, dropped its demands for fringe benefits, such as additional vacation payments. The union was reported to be seeking only a three cent increase, plus certain fringe benefits.

AMERICAN PAPER AND PULP ASSOCIATION'S PAPER PRODUCTION RATIO REPORT

(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	Sept. 29	Oct. 6	Oct. 13	Oct. 20	Oct. 27
1951	100.1	100.2	100.1	101.2r	100.9
	Sept. 30	Oct. 7	Oct. 14	Oct. 21	Oct. 28
1950	100.6	99.9	101.7	101.4	101.1

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1950	92.6	95.6	96.7	95.4	96.4	97.7	85.3	99.6	96.1	101.0	99.6	91.2	95.8
1951	99.3	101.3	101.9	102.8	102.2	100.1	88.6	98.9‡	94.8‡				

‡ Preliminary.
r Revised.

COMPARATIVE YEARLY SUMMARIES

	1944	1945	1946	1947	1948	1949	1950	1951
Year to Date	88.4	89.1	101.2	104.3	97.1	87.3	95.8	99.8
Year Average	88.1	89.4	101.1	104.3	96.2	88.6	95.8	

PAPERBOARD OPERATING RATIOS†

	Sept. 29	Oct. 6	Oct. 13	Oct. 20	Oct. 27
1951	90	88	90	89	85
	Sept. 30	Oct. 7	Oct. 14	Oct. 21	Oct. 28
1950	103	100	102	101	104

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1950	88	92	91	92	91	94	82	100	96	102	101	93	94
1951	103	105	104	105	104	103	84	94	86				

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

Note: The black line on the chart shows the ratio through December 1950 on the basis of 6-day capacity. Beginning with January 1950 the ratio is shown on the new basis of normal 6 and 7-day capacities by the colored line. Paperboard operating ratios continue on the basis of a 6-day week.

† Per cent of operation based on "inch-hours" reported to the National Paperboard Association.

CLEARING HOUSE

HELP WANTED

MEN WANTED—POSITIONS OPEN

We can place—two superintendents folding box plant, $7,500 to $12,000 year; superintendent to take full charge asbestos cement siding and flat board mfg., $6,000 to $7,200 year; foreman paper converting plant, $6,000 to $7,000 year; foreman finishing rag onion skin and lightweight specialty papers; Cylinder machine board foreman; supervisor for steam power, $6,000 to $7,500 year.

Chemists, chemical engineers, $4,000 to $9,000 year; master mechanics, mechanical and electrical engineers, salary $4,000 to $10,000 year, also laboratory men, designers and draftsmen, college graduate for inside correspondence and outside contact and selling, position in New York area; salesman for folding cartons to cover Metropolitan area district; machine tenders and back tenders; and many others.

Assistant superintendent, Cylinder board mill; electrical engineer, with degree; safety engineer and woodsman combined, $4,500 to $6,000 year.

LIST YOUR CONFIDENTIAL APPLICATION WITH US to keep informed of attractive positions open in the pulp and paper mills.

CHARLES P. RAYMOND SERVICE, Inc.
294 Washington St., Boston 8, Mass.
SPECIALISTS IN PLACING PULP AND PAPER MILL EXECUTIVES

N-9

BEATER ROOM FOREMAN

Excellent opening available for experienced shift beater room foreman for fine grades of paper. Must be good on colors and handling men. Location West Coast. Give complete details first letter. Address replies to Box 51-564, c/o Paper Trade Journal. N-23

SULFITE FOREMAN

West Coast Pulp and Paper Mill needs an experienced sulphite pulp mill shift foreman. Give complete resume of experience and availability in first letter. Excellent opportunity with progressive company. Address replies to Box 51-563 c/o Paper Trade Journal. N-23

WANTED—Master Mechanic or Assistant for modern 3-Machine Tissue Mill. Progressive management; expansion program now under way. Fine opportunity for young/middle aged man to advance. Substantial paper mill mechanical experience with electrical background desirable. Give complete resume of experience in letter to Box 51-442 care Paper Trade Journal. Replies held strictly confidential. TF

WORKING SUPERINTENDENT for small fast growing Eastern mill making lightweight specialties. Cylinder machine experience essential. State qualifications and salary expected. Address Box 51-87 care Paper Trade Journal. TF

HELP WANTED

SALARIED POSITIONS $3,000 to $65,000. We offer the original personal employment service (established 41 years). Procedure of highest ethical standards in individualized to your personal requirements. Identity covered; present position protected. Ask for particulars. R. W. BIXBY, INC. —117 Dun Bldg., Buffalo, 2, N. Y. TF

AN UNUSUAL OPPORTUNITY FOR CHEMIST AND QUALITY CONTROL MAN familiar with Folding Boards. Excellent chance for advancement.

State complete details and experience in first letter. Address Box 51-547 care Paper Trade Journal. N-16

WANTED — SALES ENGINEER — Experienced in Pulp and Paper Mills, for sales and service work in the South. Excellent opportunity with old established machinery manufacturer. In reply give resume of education, experience and current salary. Address Box 51-482 care Paper Trade Journal. N-9

SALES ENGINEER—Engineer with pulp mill experience wanted by well established machinery firm. Opportunity for advancement. Address Box 51-516 care Paper Trade Journal. TF

WANTED — Machine Tenders and Back Tenders for corrugating medium and liner mill. Fourdrinier and cylinder machines. Located in Western Pennsylvania; good working conditions; pleasant surroundings and very good labor relations. Call collect—Tarentum 1470, TARENTUM PRODUCTS CORPORATION, Tarentum, Pa. TF

TOUR BOSS—Experienced cylinder machine tender for position as Tour Boss, Rotating shifts. Mill located in western Massachusetts. Address Box 51-543 care Paper Trade Journal. N-9

WANTED—Experienced Glue Foreman. Take charge finishing department having International Straight Line and FZ Gluer, Waxer, Cello Window Machine. A fine opportunity, excellent labor relations. Medium size plant, middle west. Address Box 51-566 care Paper Trade Journal. N-9

PROCESS ENGINEER — College graduate with 4 years experience in Pulp and Paper Mill. Permanent position, San Francisco Bay area. Address Box 51-557 care Paper Trade Journal. N-9

RESEARCH CHEMIST: — Excellent opportunity for chemist or chemical engineer in research laboratory of large chemical company. Require man with several years experience in paper industry, preferably with advanced degree. Submit resume. Address Box 51-556 care Paper Trade Journal. N-23

HELP WANTED

FINE PAPER MILL: Middle Atlantic Area has long range opportunity for technically trained man in production control and development. Experience preferred but not essential. Excellent possibilities for right man. Address Box 51-568 care Paper Trade Journal. N-23

ONE MACHINE Western Fine Specialty Paper Mill has immediate opening for Production Superintendent and also another Superintendent to take complete charge of Receiving, Finishing and Shipping. References required. Address Box 51-575 care Paper Trade Journal. TF

CONSULTING ENGINEER ASSISTANT—Exceptional opportunity for qualified engineer with minimum 15 years applicable experience to carry out investigations, reports, estimates and design supervision on pulp, paper and allied projects, with long established firm of engineers. Address Box 51-576 care Paper Trade Journal. D-14

SITUATIONS WANTED

SUPERINTENDENT — Thoroughly experienced papermaker desires to make new connections. Conventional or Yankee Fourdriniers, light and heavyweight specialties. References. Address Box 51-487 care Paper Trade Journal. D-28

PULP AND PAPER CHEMIST—28; single; graduate NYS College of Forestry; employed by research organization for paper product development. Desires position in technical department of pulp and paper mill or in production. North eastern location preferred. Address Box 51-549 care Paper Trade Journal. N-16

PLANT MANAGER—Paper and Board and their conversion; wants challenging opportunity. Highly successful in organization; administration; labor relations and high level production. Presently employed. Address Box 51-463 care Paper Trade Journal. N-30

CHEMICAL ENGINEER—30 years technical and management experience, paper coating, coated abrasives, coating and converting machinery, resins and specialties. Desire technical or production position with established company. Address Box 51-471 care Paper Trade Journal. N-23

CHIEF ENGINEER—Seven years experience with major paper company in design, plant and maintenance engineering, and production problems. Professional license. Competent to take complete charge of engineering and maintenance with small paper company. Address Box 51-574 care Paper Trade Journal. N-16

FOR SALE

FOR SALE—44" Seybold Paper Cutter; 36" and 65" Cameron Slitter/Rewinder; 6" Brightwood; Int'nl. Folding Box Gluer; 30" and 44" Hartford Platen Die Cutter; 72" S & S Rotary Slitter/Creaser; Knowlton Spiral Tube Winder & Recutter like new; Complete Set-up Box Machines. Write for listings and prices. Address Box 51-467 care Paper Trade Journal. TF

FOR SALE—52" Cameron type 8 Model 5 Slitter; 48"Kidder Model CH shear cut slitter; 76" Cameron Rewinder; 75" Moore & White Upright 2 drum Reel; 42" Moore & White Sheeter; 100" Dillon Sheeter. Thomas W. Hall Company, Inc., 120 West 42nd St., New York, 18. TF

RATES FOR CLEARING HOUSE ADVERTISING

HELP WANTED—75c a line. Minimum charge $3.75.

SITUATIONS WANTED—75c a line. Minimum charge $1.75. If repeated ½ rate will be charged for each consecutive repetition.

FOR SALE—75c a line. Minimum charge $3.75

WANTED—75c a line. Minimum charge $3.75.

OPPORTUNITIES—75c a line. Minimum charge $3.75.

Classified advertising space may also be purchased at $5.00 per single column inch. All classified advertisements are payable in advance.

If box number is used—70 cents additional

Address replies to advertisements appearing under Box Number in care of PAPER TRADE JOURNAL, 10 West 47th Street, New York 18, N. Y.

FOR SALE

Two or Three Paper Machines, Cylinder or Fourdrinier, Trim 44", 48" diameter dryers chromium plated. Will rebuild to make any kind of paper and capacity to meet your needs.
Box 51-505 c/o Paper Trade Journal
TF

FOR SALE

Used dryers now operating on 40 lbs. steam pressure.
34 dryers—48" x 124"
32 dryers—48" x 118"
Box #51-523 care Paper Trade Journal.
N-30

FOR SALE

REBUILT ELECTRICAL MACHINERY

AC MOTORS (3 ph. 60 cy.)

HP	Make	Wdg	Spd.	Type
400	G.E.	S.C.	450	MT
300	G.E.	S.C.	450	I M
200	G.E.	S.C.	600	IK
125	West.	Syn.	277	
100	G.E.	S.C.	900	I M
100	Al.Ch.	S.C.	720	ARX
100	West.	Syn.	900	
100	G.E.	S.C.	1750	IK
100	West.	S.C.	1200	CS
75	West.	S.C.	1200	CS
75	G.E.	S.C.	575	ITC
60	West.	S.C.	1750	CS
60	West.	S.C.	1750	CS
40	West.	S.R.	575	CV
4-50	G.E.	S.C.	1750	KT
40	G.E.	S.C.	1750	KT
30	West. G.E.	S.C.	1150	KT828
25	900 v. West.	S.C.	1750	CS865
25	Cr.Wh.	S.C.	900	
25	West.	S.C.	1750	CS
20	Al.Ch. (new)	S.C. (Hi-Tors)	1065	ARWNH
20	West.	S.C.	1750	CS
15(2)	Al.Ch.(New)	S.C.	1200	AR
15	Al.Ch.(New)	S.C.	1800	AR

HP	Make	Wdg	Spd.	Type
10	West.	S.C.	575	CS865C
10(3)	Al.Ch.	S.C.	575	ARY
10	West.	S.C.	1200	CS837C
10(2)	Al.Ch.(New)	S.C.	1200	AR
10	Al.Ch.(New)	S.C.	1800	AR
7½	Al.Ch.(New)	S.C.	1200	AR
7½	Al.Ch.(New)	S.C.	1800	AR
7½(3)	Al.Ch.	S.C.	575	ARY
7½	G.E.	S.C.	1200	KT
7½	West.	S.C.	1440	CS854Y
7	West.	S.C.	1200	CS
5/7½	L.A.	S.C.	900/1200	2588
5	Wagner	S.C.	1725/37	PA
5	Barke	S.C.	450	KM2
5(4)	Al.Ch.(New)	S.C.	1200	AR
5	West.	S.C.	1750	
3	600v.West.	S.C.	1750	CS234

TRANSFORMERS

KVA	MAKE	PRI.	SEC.
2000 (3 PH)	G.E.	23000	2200Y
500	West.	23000	2300
500	Al.Ch.	23000	2300
50	West.	2300	110/220

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1—Dentzlgreen 1000 lb. Iron Tub. New roll 48" face x 48" diameter.

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37 feet 5" 13 ply Goodyear Rubber Belting.
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46 Chilled Iron Rolls—Assorted sizes.

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1—4 roll—60".
1—4 roll—42". All rolls bored for steam.
1—Lobdell 6 roll 124" Calender Stack, with dusters and drives.
1—Farrel Birmingham 110" Calender Stack with dusters. 2 rolls bored for steam.

CONVEYOR
1—190± ft. long x 30" wide—with motor.

CYLINDER MOLDS
1—134" face x 80" diameter, with stainless steel shafts.

DAMPENER
1—Valley Micromist Unit for water finish on paper—138" deckle.

DRYERS
2—124" face x 48" diameter.
1—77" face x 48" diameter—with gear.
1—120" face x 19" diameter—Baby Dryer.
1—102" face x 48" diameter, with bearings.
9—118" face x 42" diameter with bearings and gears.
1—120" face x 42" diameter Creping Dryer.
4—48" face x 36" diameter, with frames, gears and bearings.
18—48" face x 48" diameter, with gears, bearings and steam joints.
21—120" face x 42" diameter.
3—110" face x 42" diameter.
2—106" face x 48" diameter.
1—106" face x 30" diameter.
2—140" face x 30" diameter, with gears and bearings.

EXTRACTOR ROLLS
1—Downingtown Extractor Roll 128" face x 24" diameter. Anti friction bearings.

FILTERS
1—Oliver Vacuum Filter, Cylinder 9' face x 5' 9" diameter. Iron and vat.

FLAT SCREENS
3—8 plate Sandy Hill Roller Shoe with scrapers.
6—Harmon 12 plate.
1—Sandy Hill 12 plate roller shoe.
2—Bagley & Sewall 8 plate, with scrapers and plates.
10—Sandy Hill 12 plate roller shoes.

HYDRAPULPER
1—Sharrlo Brothers 10' batch Hydrapulper with hydraulic dump valve and skip hoist. Complete, including drive—less motor. New 1947.

HYDRAULIC PRESS
1—Thorpe 200 ton. Steam platens. 45"x45" with pump.

JORDANS
1—20 Niagal, for motor drive.
2—Jones Majestic with base and couplings—
2—#75 Appleton with base and couplings.
1—Jones Majestic, Stainless Steel Filling.
3—E. D. Jones Pony, 3/16" stainless steel fillings—banded plugs. Spare new fillings.
1—Smith & Winchester Stainless with granite fillings.

MOTORS
1—Allis Chalmers 30 h.p. 440 v. 690 r.p.m.
3—Westinghouse 100 h.p. slip ring, 440 v. 3 ph., 60 cyc. 900 r.p.m.
1—Crocker Wheeler 100 h.p. slip ring, 440 v., 3 ph. 60 cyc. 710 r.p.m.
1—General Electric 100 h.p. 440 v., 3 ph., 60 cyc., 575 r.p.m.
1—Western Electric 100 h.p. 440 v., 3 ph., 60 cyc., 690 r.p.m.
29 others 440 v. motors from 2 h.p. to 15 h.p.

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1—Mitts & Merrill #17 Pulpwood chipper.
1—Bird ball bearing Pulp Screen. Practically new. Used 3 months.
4—APMEW Ball Bearing Pulp Screens—30 ton capacity.
1—S. J. Murray 19' x 25' Barking Drum.
1—Carthage 19 knife Chipper 18" spout with belt drive.

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3—#2 Lamaque.

PUMPS
44—Centrifugal Pumps, open & closed impellers, Direct connected or Belt Driven. Extended base for motor. Assorted capacities and heads. Most used less than one year. Also new Goulds Pumps.

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1—Link Belt 40 h.p. Ratio 2.3-1. 900 r.p.m.-227 r.p.m.

REFINER
2—Claflin 21—anti friction bearings—for belt drive.

ROLLS—PRESS, COUCH, etc.
12—Press rolls, brass and rubber covered.
14—Couch rolls, brass and rubber covered.
230—Brass and steel carrying rolls.

ROTARY SCREENS
2—22A Bird Rotaries. Copper vats.

SCREW PRESSES
3—Valley Voith Screw Press Size 2.
1—Valley Voith Screw Press—enclosed drive.

SHEETERS
1—Hamblet 124" Duplex Sheeter with maxim layboy—5 roll backstand—motor and starter.
1—Moore & White Simplex 114" Sheeter with slitter—counter. Maxim layboy overlapping delivery. 3 roll backstand, motor and starter.
1—40" Kidder Spot Sheeter.
1—64" Duplex Dilion with 15 roll Beak Stand.
1—Moore & White 81" with Erie Layboy and 10 roll backstand, with motor.

SHREDDERS
1—American 37" Hammermill, anti-friction bearings.
1—Jeffrey 2814" Kolvec—7 knife rotor—6 knife bed plate. Ball bearing.

SLITTERS AND WINDERS
1—Beloit 120" Paper Machine Slitter and Rewinder—42" rewind.
1—Hudson Sharp 25W—48" Wax roll slitter and rewinder.
3—Cameron 42" Model 6—24" rewind.
2—Miami 42".
1—Cameron 42"—Model 26.

STEAM TURBINES
1—De Laval 225 h.p. Initial pressure 140 p.s.i. Exhaust pressure 25 p.s.i. Complete with gear reducer.
1—De Laval Variable speed—375 h.p. at 135 gauge and 30 p.s.i. exhaust. Complete with gear reducer.

STOCK PUMPS
1—Sharrlo 10 x 20 Single Plunger Pump.
2—Beloit 8x10 Triplex.

SUCTION COUCH ROLLS
2—Millspaugh 36" diameter x 224" drilled face with enclosed drive, water cooled bearings, 12" suction boxes and 1 spare shell.

SUCTION PRESS ROLLS
1—Sandusky 62" drilled face x 14" diameter.

SUPERCALENDERS
1—Norwood 74" 9 roll with unwind and rewind. Complete with drive and 2 spare rolls.
1—Norwood 64" 10 roll with unwind and rewind. Complete with drive and 2 spare rolls.
1—Norwood 56" 9 roll with unwind and rewind. Complete with drive and 2 spare rolls.

THICKENER
1—Woods Thickener with anti friction bearing. Cylinder 49" diameter x 132" face.

TOILET TISSUE PERFORATOR
1—Paper Converting Machine Co. Model 141 automatic 81" Perforator, slitter and Winder—with three motors—ball bearing.

VACUUM PUMPS
4—Nash ½ H-5 Vacuum Pumps
2—Nash #3.
1—Nash #2.

WAXING MACHINES
1—60" Patterlo complete from 1st off to single roll rewind section.
1—80" Special—complete from 2 roll 1st off to single roll rewind.

WET MACHINES
1—Appleton 74" face x 36" diameter cylinder.
1—Appleton 74" face x 38" diameter cylinder.

WRAPPING MACHINE
1—Narrow Stevens type IC. Package thickness ¼" to 5". Used 30 days.

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1—52" Type 8-S.
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1—42" and 1—62" Type 40-1-AF.
1—62" Type 10.
1—72" Type 5.
1—82" Type 10.

OTHER SLITTERS

1—48" Meisel Shear Cut, Series O.P. 2.
1—62" Type AA Langston Shear Cut.
1—36" Special Cellophane and Paper Slitter.
1—60" Hammersly Score Cut.
1—30" and 1—40" Langston Type A Shear Cut S. & R.
1—42" Langston Center Wind Duplex Shear Cut Slitter and Rewinder.

POWER PAPER CUTTERS

6—Seybold, 44", 54" and 63" 20th Century; 34", 44", 48" and 54" Holyoke; Dayton, 50".
5—Oswegos, 32", 38", 44", 50" and 57".
6—Sheridans, 34", 36", 40", 50", 54" and 58".
1—Dexter, 50".
3—Acme, 32", 34", 36", 46" and 50".
1—Smith and Winchester Undercut 63".

MISCELLANEOUS MACHINES

1—6½" and 1—20" four unit Champlain Rotogravure Presses.
1—72" Hudson-Sharp 25W Winder for Waxed and Household paper rolls.
1—36" Beck Rotary Sheet Cutter with Jogger Table Delivery.
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1—48" Waldron Intaglio press for printing board in sheets.
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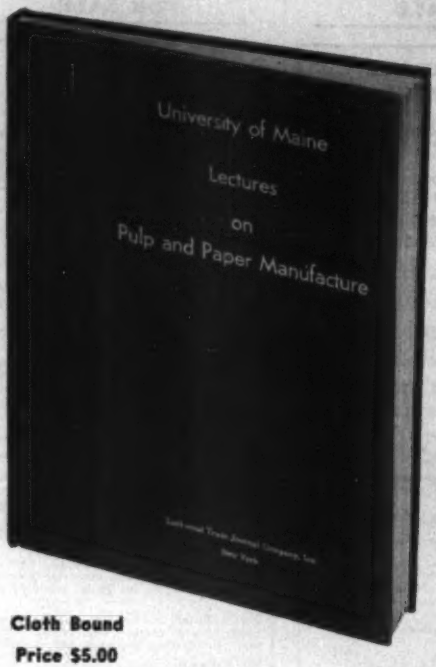

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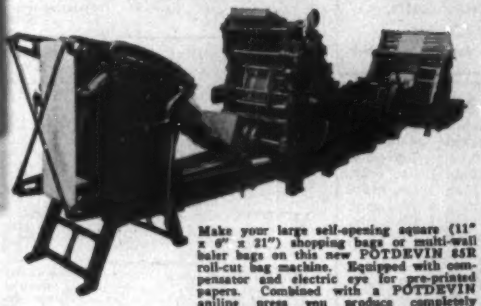

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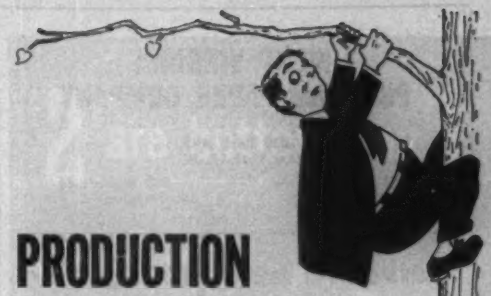

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Geigy Co., Inc.
B. F. Goodrich Chemical Co.
Gottesman & Co.
Hercules Powder Co.
Hooker Electrochemical Co.
The Kinsley Chemical Company
Monsanto Chemical Company
National Aluminate Corp.
Naugatuck Chemical Division of U. S. Rubber Co.
Niagara Alkali Company
Nopco Chemical Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
Reichhold Chemicals, Inc.
Rohm & Haas Co.
Virginia Smelting Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

CHESTS
The Bagley & Sewall Company
E. D. Jones & Sons Co.
Kalamazoo Tank & Silo Co.
Shartle Bros. Mch. Co.

CHIP PACKERS
Fibre Making Processes, Inc.

CLEANING MATERIALS
American Cyanamid Company Industrial Chemicals Division
Diamond Alkali Co.
The Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Pittsburgh Plate Glass Co.
Wyandotte Chemicals Corp., J. B. Ford Division

CLUTCHES
Appleton Machine Co.
The Bagley & Sewall Company
Black Clawson Company
Farrel-Birmingham Co.
Hudson-Sharp Mch. Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.
Stephens-Adamson Mfg. Co.

COATING MACHINERY
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
The Mayer Machine Co., Inc.
Moore & White Co.
Potdevin Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corporation, John
Weber, Herman G., & Co., Inc.

COATING MATERIALS
American Cyanamid Company Industrial Chemicals Division
The Dow Chemical Co.
E. I. du Pont de Nemours & Co., Inc.
B. F. Goodrich Chemical Co.
The Goodyear Tire & Rubber Company
Hercules Powder Co.
J. M. Huber Corp.
Monsanto Chemical Company
Naugatuck Chemical Division of U. S. Rubber Co.
Nopco Chemical Co.
Plankon Division, Libbey-Owens-Ford Glass Co.
Reichhold Chemicals, Inc.
Wyandotte Chemicals Corp., Michigan Alkali Div.

COILS
The N. P. Bowsher Co.

COMPLETE FOURDRINIER ROLL GRINDING
Manchester Machine Co.

COMPRESSORS
Allis-Chalmers Mfg. Co.
Nash Engineering Co.
Roots-Connersville Blower Corp.

CONDENSATE FILTERS
Hungerford & Terry, Inc.
The Permutit Company

CONDENSERS
Fibre Making Processes, Inc.

CONSISTENCY REGULATORS
Askania Regulator Co.
Bird Machine Company
DeZurik Shower Company
Paper & Industrial Appliances

CONSTRUCTION CONTRACTORS
C. M. Guest & Sons

CONSULTING ENGINEERS
Black Clawson Company
Dilts Machine Works
Ebasco Services
Frank W. Egan & Co.
Alvin H. Johnson & Co., Inc.
Main, Inc., Chas. T.
The Rust Engrg. Co.
Shartle Bros. Mch. Co.
J. E. Sirrine & Co.
Frank C. Vaughan
John Waldron Corp.
H. G. Weber & Co., Inc.

CONTINUOUS DIGESTER
Paper & Industrial Appliances

CONTROLLERS
Black Clawson Company
The Brown Instrument Co.

CONTROLS
The Brown Instrument Co.
Johnson Corp.
Poirier Control Co.
Shartle Bros. Mch. Co.
Stickle Steam Specialties Co.

CONVERTING MACHINERY
The Bagley & Sewall Company
Egan, Frank W., & Co.
John Waldron Corp.
Dilts Machine Works

CONVEYORS
Black Clawson Company
Jeffrey Mfg. Co.
Murray, D. J., Mfg. Co.
Ross Engineering Corp., J. O.
Shartle Brothers Mch. Co.
Stephens-Adamson Mfg. Co.

CORES
Elizman Paper Co.
Smith & Winchester Mfg. Co.
Sonoco Products Co.

CORROSION RESISTANT
Amercoat Corporation

COTTON LINTER
Alpha Cellulose Corp.
Hercules Powder Co., Inc.
Railway Supply & Mfg. Co.

COTTON PULP
Alpha Cellulose Corp.

COUCH ROLLS
Beloit Iron Works

COUPLINGS
The Bagley & Sewall Company
Black Clawson Company
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Lovejoy Flexible Coupling Co.
Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works
Waldron Corp., John

CRANES
Cleveland Crane & Engrg. Co.
Whiting Corp.

CURL TESTER
Thwing-Albert Instrument Co.

CUTTERS
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Dilts Machine Works
Gibbs-Brower Company, Inc.
Graphic Arts International Corp.
Thomas W. Hall Co.
Harris-Seybold Co.
Jagenberg-Werke Akt. Ges.
Moore & White Co.
Perkins & Son, Inc., B. F.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
The Smith & Winchester Mfg. Co.
Taylor, Stiles & Co.

CYLINDER MOULDS
Manchester Machine Co.
Rice Barton Corporation

CYLINDERS
M. W. Jenkins Sons, Inc.

DAMPENERS
Perkins & Son, Inc., B. F.
Valley Iron Works Co.

DECKLE WEBBING
Williams-Gray Co.

DEFIBRATORS
American Defibrater Co.

DE-INKING
Dilts Machine Works
General Dyestuff Corp.
Kinsley Chemical Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DEINKING CHEMICALS
E. I. du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
Kinsley Chemical Co.
Nopco Chemical Co.

DE-MINERALIZING EQUIPMENT
Hungerford & Terry, Inc.
The Permutit Company

DEMULSIFIERS
Wyandotte Chemicals Corp., Michigan Alkali Div.

DENSOMETERS
Bunge Pulp & Paper Co.
W. & L. E. Gurley

DESIGN CONSTRUCTION
Ebasco Services

DETERGENTS
American Cyanamid Company Industrial Chemicals Division
Calgon, Inc.
Diamond Alkali Co.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

DEWATING CHEMICALS
American Cyanamid Company Industrial Chemicals Division
General Dyestuff Corp.
Nopco Chemical Co.

DIFFERENTIAL SCALES
Thwing-Albert Instrument Co.

DIGESTERS CIRCULATING SYSTEMS
Fibre Making Processes, Inc.

DIGESTERS
Babcock & Wilcox Co.
Blaw Knox Company
Chicago Bridge & Iron Co.
Combustion Engineering-Superheater, Inc.
Lukenweld
Paper & Industrial Appliances
Pusey & Jones Corp.

DISPERSING AGENTS
Calgon, Inc.
Diamond Alkali Co.
General Dyestuff Corp.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

DOCTORS
The Bagley & Sewall Company
Bird Machine Company
Black Clawson Company
Downingtown Mfg. Co.
Lobdell United Co.
Lodding Engineering Corp.
The Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DOCTOR BLADES
The Bagley & Sewall Company
Bird Machine Company
Lodding Engrg. Corp.
The Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Simonds Saw & Steel Co.

DRIERS
The Bagley & Sewall Company
Black Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Lukenweld
The Moore & White Co.
Murray Mfg. Co., D. J.
J. J. Ross Company
Red-Ray Mfg. Co., Inc.
Rice Barton Corporation
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

DRILLED SUCTION COUCH ROLLS
Manchester Machine Co.

DRILLED SUCTION DRUM ROLLS
Manchester Machine Co.

DRIVES
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
The Bagley & Sewall Company
Beloit Iron Works
Bird Machine Co.
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Farrel-Birmingham Co.
Jeffrey Mfg. Co.
General Electric Company
Gibbs-Brower Company, Inc.
Moore & White Co.
Murray, D. J., Mfg. Co.
Pusey & Jones Corp.
Rice Barton Corporation
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.
Stephens-Adamson Mfg. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

DRUM WINDERS
Manchester Machine Co.
Rice Barton Corporation

DRYER DRAINAGE
Stickle Steam Specialties Co.

DRYER ROLL PYROMETER
Thwing-Albert Instrument Co.

DUSTERS
Appleton Machine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
M. W. Jenkins Sons, Inc.
E. D. Jones & Son Co.
Moore & White Co.
D. J. Murray Mfg. Co.
John Waldron Corp.

DUSTING BRUSHES
M. W. Jenkins Sons, Inc.

DYESTUFFS
American Cyanamid Company
Calco Chemical Div.
Bunge Pulp & Paper Co.
Ciba Company
E. I. du Pont de Nemours & Co., Inc.
Geigy Co., The
National Aniline Division, Allied Chemical & Dye Corp.

ELECTRIC HYGROMETER
Thwing-Albert Instrument Co.

EMBOSSING MACHINES
Dilts Machine Works
Egan, Frank W., & Co.
John Waldron Corp.

EMBOSSING ROLLS
The Appleton Machine Co.
Gibbs-Brower Company, Inc.
Holyoke Machine Co.
Northern Engraving & Mch. Co.
B. F. Perkins & Son, Inc.
John Waldron Corp.
Wheeler Roll Co.

EMULSIFIERS
General Dyestuff Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp.

ENZYMES
Rohm & Haas Co.
Vanderbilt Co., R. T.

EVAPORATORS
Davis Engrg. Corp.
Goslin-Birmingham Mfg. Co., Inc.
Murray, D. J., Mfg. Co.
Swenson Evaporator Co., Div. of Whiting Corp.

EXPANDERS
Mount Hope Machinery Co.

FANS
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.

FEEDERS
Hoffl Company, Inc.
Jeffrey Mfg. Co.
Merrick Scale Mfg. Co.
The Permutit Company
Stephens-Adamson Mfg. Co.

FELTS
Appleton Woolen Mills
Asten-Hill Mfg. Co.
Draper Bros. Corp.
Huyck & Son, F. C.
Lockport Felt Co.
Morey Paper Mill Supply Co.
Shuler & Benningbofen
Waterbury Felt Co.
Waterbury, H., & Sons Co.
Williams-Gray Co.

FELT CLEANERS
Calgon, Inc.
General Dyestuff Corp.
Nopco Chemical Co.

FELT CONDITIONERS
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Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

FILLERS
American Cyanamid Company, Industrial Chemicals Division
A. M. Meincke & Son, Inc.
Vanderbilt Co., R. T.
Wyandotte Chemicals Corp., Michigan Alkali Div.

FILTERS
Bird Machine Company
Holyoke Machine Co.
J. M. Huber Corp.
Hungerford & Terry, Inc.
Johnson Corp.
Moore & White Co.
J. O. Ross Engrg. Corp.
The Sandy Hill Iron & Brass Works
Walworth Company

FITTINGS
The Bagley & Sewall Company
Crane Company
Shartle Bros. Mch. Co.
Walworth Company

FLEXIBLE COUPLINGS
Egan, Frank W., & Co.
Jeffrey Mfg. Co.
Lovejoy Flexible Coupling Co.
John Waldron Corp.

FLOORING, GRATING AND TREADS
The Goodyear Tire & Rubber Company
Norton Co.

FLOW BOXES, STAINLESS-CLAD
Lukens Steel Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works

FORK LIFT TRUCKS
Clark Equipment Company Industrial Truck Division
Elwell Parker Elec. Co.
Towmotor Corp.

FORMATION TESTERS
Thwing-Albert Instrument Co.
Williams Apparatus Co., Inc.

FOURDRINIERS
Beloit Iron Works
Black Clawson Company
Downingtown Mfg. Co.
The Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

FREENESS TESTERS
Testing Machines, Inc.
Williams Apparatus Co.

FURNACES
Hoeft Company, Inc.

GASKETS
The Goodyear Tire & Rubber Company

GEARS
The Bagley & Sewall Company
Black Clawson Company
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Stroh Process Steel Co.
Valley Iron Works Co.
Westinghouse Electric Corp.
Western Gear Works

GRAPPLES
Blaw-Knox Company

GRAVITY FILTERS
Holyoke Machine Co.

GRINDERS
Carthage Machine Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Lobdell United Co.
Norton Company
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

GRINDING WHEELS
Norton Company
Simonds Abrasive Co.

GUIDES
The Bagley & Sewall Company
Egan, Frank W., & Co.
Gilbert & Nash Co.
The Moore & White Co.
Mount Hope Machinery Co.
Rice Barton Corporation
John Waldron Corp.

GUMMING MACHINES
Dilts Machine Works
Egan, Frank W., & Co.
The Sandy Hill Iron & Brass Works
Waldron, John, Corp.

GUMS
Hercules Powder Co., Inc.
National Starch Products, Inc.
Stein-Hall Co., Inc.

HEAT EXCHANGERS AND RECOVERY SYSTEMS
Fibre Making Processes, Inc.
Stickle Steam Specialties Co.
Westinghouse Electric Corp.

HEATING, VENTILATING & AIR CONDITIONING
The Appleton Machine Co.
E. D. Jones & Sons Co.
General Electric Co.
D. J. Murray Mfg. Co.
Red-Ray Mfg. Co., Inc.
Ross Engineering Corp., J. O.
Stickle Steam Specialties Co.
Valley Iron Works Co.
Ross, J. O., Engrg. Corp.

HOSE (Air, Water, Suction, etc.)
The Goodyear Tire & Rubber Company

HUMECTANTS
Aktivin Division, Heyden Chemical Corp.
Nopco Chemical Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

IMPREGNANTS
American Cyanamid Company, Industrial Chemicals Division
B. F. Goodrich Chemical Co.

INDENTING MACHINES
Dilts Machine Works

INDUSTRIAL TRACTORS
Clark Equipment Company, Industrial Truck Division
Towmotor Corp.

INKOMETER
Thwing-Albert Instrument Co.

INSTRUMENTS, TESTING AND MEASURING
Brown Instrument Co.
Bunge Pulp & Paper Co.
Cambridge Instrument Co.
General Electric Company
W. & L. E. Gurley
B. F. Perkins & Son
Photovolt Corp.
Taylor Instrument Cos.
Testing Machines, Inc.
Thwing-Albert Instrument Co.
Williams Apparatus Co.

JOINTS
The Bagley & Sewall Company
Beloit Iron Works
Johnson Corp.
Lovejoy Flexible Coupling Co.
Rice Barton Corporation
Shartle Bros. Mch. Co.

JORDAN FILLINGS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
E. D. Jones & Sons Co.
Shartle Bros. Mch. Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

KNIVES
Black Clawson Company
Dilts Machine Works, Inc.
Hamblet Machine Co.
Heppenstall Company
E. D. Jones & Sons Co.
The Moore & White Co.
Simonds Saw & Steel Co.
Taylor Stiles & Co.
Valley Iron Works Co.

KNOTTERS
Fibre Making Processes, Inc.

KRAFT WRAPPING PAPERS
Canadian Newsprint Supply Co.

LABORATORY CORRUGATOR
Thwing-Albert Instrument Co.

LABORATORY EQUIPMENT
Appleton Machine Co.
Bauer Brothers Co.
Bird Machine Company
Dilts Machine Works
W. & L. E. Gurley
Egan, Frank W., & Co.
E. D. Jones & Sons Co.
Taylor Instrument Companies
Testing Machines, Inc.
Valley Iron Works Co.
John Waldron Corp.
Williams Apparatus Co., Inc.

LAMINATING MACHINES
The Bagley & Sewall Company
Dilts Machine Works
Egan, Frank W., & Co.
Rice Barton Corporation
John Waldron Corp.

LAY BOYS
Dilts Machine Works
Gibbs-Brower Company, Inc.
Hamblet Machine Co.
Moore & White Co.

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Clark Equipment Company, Industrial Truck Division

LINTER COTTON
Alpha Cellulose Corp.
Hercules Powder Co., Inc.
Railway Supply & Mfg. Co.

LINTER PULP
Alpha Cellulose Corp.
Hercules Powder Co., Inc.

LUBRICANTS
Gulf Refining Co.
Sinclair Refining Co.
Socony-Vacuum Oil Co.
Sun Oil Company
The Texas Company
Tide Water Associated Oil Co.

MAGAZINE REELS
Dilts Machine Works (Kohler Systems)

MATERIALS HANDLING
Clark Equipment Company
Industrial Truck Division
Cleveland Crane & Engrg. Co.
Dilts Machine Works
Jeffrey Mfg. Co.
Shartle Bros. Mch. Co.
Stephens-Adamson Mfg. Co.
The Wellman Engrg. Co.

METAL TIRES
Stroh Process Steel Co.

MICROMETERS & CALIPERS
Farrel-Birmingham Co.
Lobdell Co.
Stephens-Adamson Mfg. Co.
Testing Machines, Inc.

MICRO-CRYSTALLINE WAXES
Bareco Oil Co.
Bunge Pulp & Paper Co.
Moore & Munger
Sun Oil Company

MOISTURE CONTENT CONTROL
Cambridge Instrument Co.
Stickle Steam Specialties Co.
Williams Apparatus Co., Inc.

MOTORS AND GENERATORS
Allis-Chalmers Mfg. Co.
Fairbanks, Morse & Co.
General Electric Company
Reliance Electric & Engrg. Co.

NEWSPRINT
Bunge Pulp & Paper Co.

NICKEL AND NICKEL ALLOYS
The International Nickel Co.

NOZZLES
Spray Engrg. Co.

PACKING BOXES
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Johnson Corporation
The Moore & White Co.
Shartle Brothers Machine Co.

PALLET TRUCKS
Clark Equipment Company, Industrial Truck Division

PAPER MACHINE DRIVES
The Bagley & Sewall Company
Manchester Machine Co.
Rice Barton Corporation

PAPER MACHINES
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Beloit Iron Works
Bagley & Sewall Co.
Black Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Lukenweld
Moore & White Co.
Pusey & Jones Corp.
Rice Barton Corporation
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

PAPER MACHINE SLICES
Black Clawson Company
E. D. Jones & Sons Co.
The Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

PAPER TUBE MACHINERY
Dietz Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson Sharp Machine Co.
Jagenberg-Werke Akt. Ges.
Langston Co., Samuel M.

PARAFFINE WAXES
Moore & Munger
Sun Oil Company

PARAFFIN WAX EMULSIONS
Hercules Powder Co., Inc.
Nopco Chemical Co.

PASTING MACHINES
Beloit Iron Works
Black Clawson Company
Dilts Machine Wks.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Murray, D. J., Mfg. Co.
Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

PEBBLE MILLS
F. L. Smidth & Co.

PERFORATED METAL
Allis-Chalmers Mfg. Co.

pH METERS
Cambridge Instrument Co.
Thwing-Albert Instrument Co.

PIPE
Armco Drainage & Metal Products, Inc.
Babcock & Wilcox Co.
Crane Company
Grinnell Company
Michigan Steel Casting Co.
National Tube Co.
Walworth Company

PIPE FITTINGS
Armco Drainage & Metal Products, Inc.
Crane Company
Grinnell Company
Michigan Steel Casting Co.
Walworth Co.

PITCH CONTROL
American Cyanamid Company, Industrial Chemicals Division
General Dyestuff Corp.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Rohm & Haas Co.

PLASTICIZERS
American Cyanamid Company, Industrial Chemicals Division
Aktivin Division, Heyden Chemical Corp.
B. F. Goodrich Chemical Co.
Naugatuck Chemical Division of U. S. Rubber Co.
Nopco Chemical Co.

PLATERS
Gibbs-Brower Company, Inc.
Perkins & Son, Inc., B. F.

PLATES
Armco Steel Corp.
Babcock & Wilcox Co.
J. O. Ross Engrg. Corp.
Lukenweld Division
Lukens Steel Company
Timken Roller Bearing Co.

PLUGS
The Appleton Machine Co.
Black Clawson Company
E. D. Jones & Sons Co.
Shartle Brothers Machine Co.

POPE TYPE REELS
Egan, Frank W., & Co.
Manchester Machine Co.
Rice Barton Corporation

PRECISION SAMPLE CUTTER
Testing Machines, Inc.
Thwing-Albert Instrument Co.

PRESERVATIVES
E. I. du Pont de Nemours & Co.
General Dyestuff Corp.

PRESS ROLLS
Beloit Iron Works
Rice Barton Corporation

PRESSURE FILTERS
Holyoke Machine Co.

PRESSURE VESSELS
Chicago Bridge & Iron Co.
Combustion Engineering-Superheater, Inc.

PRESSES
Black Clawson Company
Dietz Machine Works
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson-Sharp Mch. Co.
The Moore & White Co.
Potdevin Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.
Waldron Corp., John
H. G. Weber & Co., Inc.
Williams Apparatus Co.

PULLEY
Lovejoy Flexible Coupling Co.
Rice Barton Corporation

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Thwing-Albert Instrument Co.

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Shartle Brothers Machine Co.

PULPS
Alpha Cellulose Corp.
Brown Company
Bulkley, Dunton Pulp Co., Inc.
Bunge Pulp & Paper Co.
Gottesman & Co., Inc.
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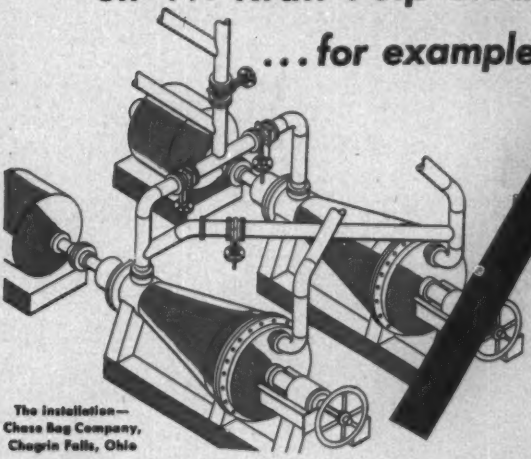

The installation—
Chase Bag Company,
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PROBLEM: To find a better replacement for valves in Jordan room piping, to eliminate the costly nuisance of clogged lines and inoperative valves due to pulp being trapped in seats and bonnets.

WORKING CONDITIONS: Consistency of stock normally held at about 4%. Piping and valves, both inlet and outlet lines, 8-inch. Operation continuous; valves operated infrequently.

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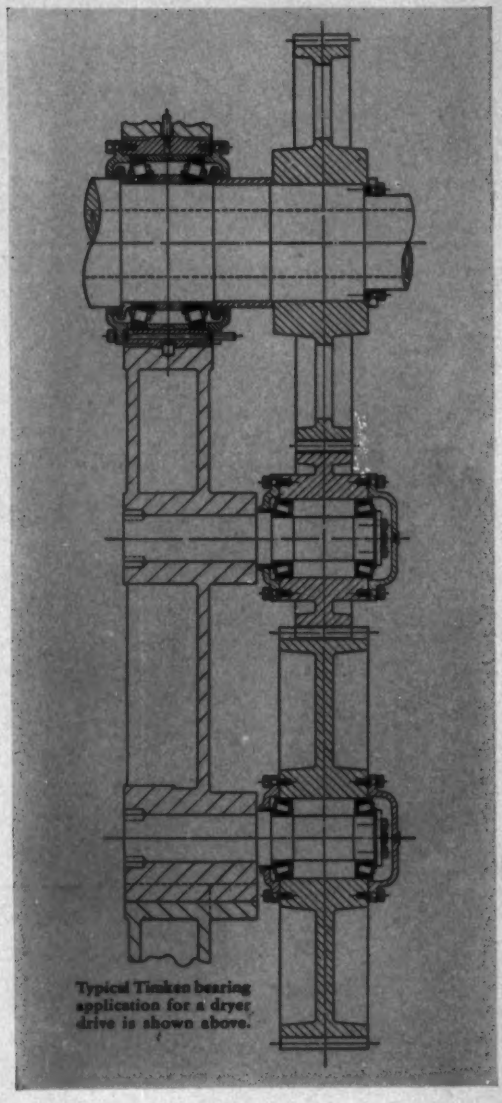

Typical Timken bearing application for a dryer drive is shown above.

What bearing advantages should you have in your new paper dryer drive?

A VITAL part of any paper dryer is the drive. And when design engineers specify Timken® tapered roller bearings for your dryer drives and idlers, they're assuring long life and dependable operation with minimum time-out for maintenance and repairs.

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Lubrication and maintenance time are cut to a minimum with Timken bearings. More effective closures are possible because Timken bearings keep housing and shaft concentric. Grit and moisture are kept out — lubricant kept in. Paper spoilage from oil or gas leaks is prevented. And Timken bearings have extra resistance to wear because they're case-carburized to provide a hard wear-resistant surface and a tough shock-resisting core.

The tapered construction of Timken bearings enables them to take radial and thrust loads in any combination. Line contact between the rollers and races of Timken bearings provides extra load carrying capacity. And because Timken bearings are 1) engineered for the job, 2) precision manufactured, 3) made of Timken fine alloy steel, they normally last the life of the machine.

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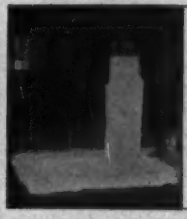

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